Assessment Report for The Crown Mountain Area

Kootney Land District, Fort Steele Mining Division

NTS Map Sheets: 082G15, 082G10

Coal Tenure Numbers: 418150, 418151, 418152, 418153, 418154

British Columbia Map Reference: 082G077, 082G087

Latitude: 49.815 Longitude: 114.723

NOW 1630209 201101 Application Date 11 May 2011 Approval Date 14 June 2012

NOW 1630209 201201 Application Date 25 June 2012 Approval Date 18 Sept. 2012

NOW 1630209 201203 Application Date 01 July 2012 Approval Date 17 Aug. 2012

NOW 1630209 201204 Application Date 19 Oct. 2012 Approval Date 01 Nov. 2012

Coal Licences Owned by: NWP Coal Canada Ltd
Suite 800, 1199 West Hastings
Vancouver, BC
V6E 3T5

Exploration Program Operated by: NWP Coal Canada Ltd
Suite 800, 1199 West Hastings
Vancouver, BC
V6E 3T5

Work Conducted Between July 23, 2012 and November 18, 2012

Authors: Geoff Jordan P.Geo., Michelle Eskrick P.Geol., Lauren Boutillier Geol.I.T

Date Submitted: March 31, 2013

Table 10.1 and pages 291-418 of this PDF contain data that remain confidential under the terms of the *Coal Act Regulation*, Section 2(1). They have been removed from the public version.

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/10_251_2004#section2

Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Assessment Report for Crown Mountain Area, Kootney **TOTAL COST:** $2,394,601.22

AUTHOR(S): Geoff Jordan, Michelle Eskrick, Lauren Boutillier **SIGNATURE(S):** Original Signed and Sealed by Author

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): CX-5-14 **YEAR OF WORK:** 2012

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S):

PROPERTY NAME: Crown Mountain

CLAIM NAME(S) (on which the work was done): Crown Mountain Coal Lease 418150, 418151, 418152, 418153, 418154

COMMODITIES SOUGHT: Coal

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:

MINING DIVISION: Fort Steele **NTS/BCGS:** 082G15, 082G10 / 082G077, 082G087

LATITUDE: 1140 ° 43.6 ' W " **LONGITUDE:** 490 ° 48.4 ' N " **(at centre of work)**

OWNER(S):
1) NWP Coal Canada Ltd 2)

MAILING ADDRESS:
Suite 800, 1199 West Hastings, Vancouver B.C., V6E 3T5

OPERATOR(S) [who paid for the work]:
1) NWP Coal Canada Ltd 2)

MAILING ADDRESS:
Suite 800, 1199 West Hastings, Vancouver B.C., V6E 3T5

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
Coal, sandstone, siltstone, shale, Jurassic-Cretaceous, Kootenay Group, Mist Mountain Formation, Alexander Creek Syncline, Crown Mountain Thrust Fault, Ewin Pass Fault, Moderate geology type, Complex geology type, Low to Medium Volatile Bituminous

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:

Next Page

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping	Surface Exploration	418150, 418151, 418154	$16,370.21
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other	Down-hole geophysical wireline logs and rem	418150, 418151, 418154	$92,892.73
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock	Coal quality analysis on cutting samples	418150, 418151, 418154	$92,118.59
Other	Petrography on selected cutting samples		included in above
DRILLING (total metres; number of holes, size)			
Core	1 core hole attempt	418150	included in below
Non-core	5768m; holes: 41, bit size: 4 3/4"	418150, 418151, 418154	$538,346.25
RELATED TECHNICAL			
Sampling/assaying	Exploration/Techincal Services	418150,418151,418153,418154,41815	$993,619.99
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)	Land Administration		$5,000.05
Road, local access (kilometres)/trail	3.8ha		$395,305.90
Trench (metres)	0.6ha		included in above
Underground dev. (metres)			
Other	Environmental&Rehabilitation/Off-property costs		$115,813.15 / $145,134.35
		TOTAL COST:	$2,394,601.22

NORWEST
CORPORATION

Crown Mountain Assessment Report

TABLE OF CONTENTS

15. List of Tables

16. List of Appendices

1 INTRODUCTION

This report presents results of coal exploration activities conducted during the summer and fall of 2012 on the Crown Mountain property located in southeastern British Columbia (BC). Norwest Corporation (Norwest) was contracted by NWP Coal Ltd, a wholly owned subsidiary of Jameson Resources Limited (Jameson), to assist with this exploration program.

I. 2012 Project Objectives

- oversight of an exploration program involving the drilling of 40 new coal exploration drill holes and several trenches;
- confirmation of the geological interpretations of the historic mapping and drilling in the Crown Mountain area;
- integration of the new exploration and drilling results with those of historic programs of the past;
- interpretation of the geological results from that work;
- documentation of the extent, depth and thickness range of the coal deposits in all area of the property;
- determine the coal quality of the represented coal seams from cuttings samples; and
- estimation of the coal resources on the property through the preparation of a computer geologic model.

II. Property Description and Access

The property is located in a mountainous area at relatively high elevations about 13 km east of Sparwood, BC and about 150 km line-of-sight south southwest from Calgary, Alberta. The North Block and South Block of the property are located about 35 km by road from Sparwood. Similarly, the Southern Extension is a road distance of 20 km from the same location. The location of the property is shown on Figure 1-1. The property is divided up into three areas: the North Block, South Block and Southern Extension Block.

Access to the North and South Blocks is via British Columbia Highway 43, and the Line Creek Road, both of which are paved, and via a series of unpaved secondary roads and trails. Access to the Southern Extension Block is via Highway 3 and the gravel Alexander Creek Road. On the property, drill sites and other exploration locations require the use of suitable 4x4 vehicles for surface access due to the nature of the roads.

The main line of the Canadian Pacific Railroad lies adjacent to Highway 3 from Alberta to Sparwood and then trends south to Fernie before continuing on the ports on the west coast. A spur from this line extends to the north following the Elk Valley to service the Line Creek and other mines in that area.

The relief on the property is generally in the range from 2,200 m to about 1,850 m. However in Alexander Creek which drains the property it is typically in the range from 1,400 m to 1,500 m. On the top of Gaff Peak, located to the west of the licenses the elevation is as much as 2,479 m. For most of the property, topography consists of rugged ridges with moderate to steep-sloping sides at higher elevations and gentle slopes at lower elevations. The setting is truly mountainous, underlain mostly by structurally deformed sandstone, siltstone, mudstone and coal.

Alexander Creek drains the property and passes through the center of the southern part of the property, trending generally from north to south. Other important rivers in the area include the Elk River, the valley of which includes Highway 3 to the west of the property and the Crowsnest River to the south; Alexander Creek flows into the Crowsnest River. Water should be available from any of these sources or from several streams that are tributaries to these rivers. Power lines follow the route of Highway 3 and service the various communities in the area.

Records from the weather recording station indicate total average yearly precipitation is 105 cm with winter snowfall averaging 368 cm. The highest and lowest temperatures recorded at Fernie were 36°C and minus 40°C, respectively. Despite the temperature range, the open pit mines in the surrounding region operate through all seasons of the year.

During exploration in this general area snow depths in the higher elevations have been reported to exceed 4 m in places. Snow can cover the ground from late September to the end of May at higher elevations. The property, especially in the east, is vegetated by native vegetation that is typical of the Subalpine Forest zone of this area.

III. Property History

The history of exploration and development of this coal property extends back to coal development activities in southern Alberta and Southeast British Columbia of the late nineteenth century. At that time, the Crow's Nest Pass Coal Company was established in 1897 to develop the coal resources of the British Columbia side of the Crowsnest Pass. Several subsidiaries were created to operate ancillary activities. They included the Morrissey, Fernie and Michel Railway, and the Crows Nest Pass Electric Light and Power Company. Various mines were opened at Coal Creek, Natal, Michel and Morrissey. After the Second World War demand for coal dropped and the company diversified through a subsidiary, Crow's Nest Pass Oil and Gas Company. As the 1950s and 1960s progressed the mines were closed and the company moved into the forest products area.

In 1965 the name of the company was changed to Crows Nest Industries Ltd. In 1968 the company's coal resources were sold to Kaiser Steel and the assets of Crows Nest Pass Electric Light and Power were sold to British Columbia Hydro. However there are existing historic references to coal drilling exploration being completed by Crows Nest Industries Ltd. in the Crown Mountain area in 1969 and exploration data from that program has been used in the

present report. Thus either the date of the sale to Kaiser is incorrect or the Crown Mountain asset was never sold to Kaiser Steel. Either way, the Crown Mountain Coal Property was owned by Crows Nest Industries in 1976.

A change in the demand for coal resulted in the company reacquiring some coal lands from Kaiser in 1976. In 1977 Shell Canada purchased the company and renamed it Crows Nest Resources Limited. That company was sold in 1991 and ownership and responsibility for at least some of its coal assets were transferred with the sale.

Crows Nest Resources Limited explored the property for three field seasons from 1979 through 1981. In 1979 the property was mapped and drilled, the latter including both core and cuttings sampling of different holes. The program of 1980 was a relatively minor one only including geologic mapping. The program of 1981 consisted of further mapping, hand trenching of seam exposures and the construction of a mechanically excavated pit and the collection of a bulk sample. These activities appear to be the last exploration works performed on this property during the Crows Nest Resources/Shell Canada tenure. Eventually the property was relinquished and later acquired by Morris Geological. It appears that no further exploration work was conducted on the property until it was acquired by Jameson.

IV. Property Location and Coal Tenure

The Crown Mountain Coal Property is located in the Elk Valley Coalfield in the East Kootenay region of southeast British Columbia. It is approximately 150 km line-of-sight and 300 km by road southwest of Calgary, Alberta. The center of the property is about 30 km northeast of Sparwood, British Columbia, at Latitude 1140 43.6'W, Longitude 490 48.4'N, as shown on Figure 2-1. The location and distribution of the coal licences is shown on Figure 1-2. According to the tenure records of the British Columbia Provincial Government, title to the coal licences is held by NWP Coal Canada Ltd. (NWP Coal) of Vancouver, British Columbia. The tenure records show that NWP Coal holds a 100% interest in five adjacent coal licences that cover a combined area of 2,588 ha. Table 1.1 is a reproduction of the government records concerning these titles.

TABLE 1.1
JAMESON RESOURCES LIMITED
CROWN MOUNTAIN COAL PROPERTY
COAL LICENCE TENURE DATA

Tenure Number	Map Reference	Work Recorded to	Status	Mining District	Area (ha)
418150	082G087	May 2, 2013	Good Standing May 2, 2013	Fort Steele	334
418151	082G077	May 2, 2013	Good Standing May 2, 2013	Fort Steele	1001
418152	082G087	May 2, 2013	Good Standing May 2, 2013	Fort Steele	167
418153	082G087	May 2, 2013	Good Standing May 2, 2013	Fort Steele	251
418154	082G087	May 2, 2013	Good Standing May 2, 2013	Fort Steele	835

Jameson has provided information to Norwest that NWP Coal is an owned subsidiary, incorporated for the purpose of acquiring coal assets. Jameson, acting through NWP Coal, originally acquired the coal licence rights to the Crown Mountain Coal Property from Robert J. Morris. The completion of that transaction led Jameson to acquire a 90% interest in the property, the remaining 10% being retained by Robert J. Morris as an undivided interest.

V. 2012 Summary Of Work

Prior to mapping, drilling and trenching, numerous existing roads and trails were improved to allow 4x4 and drill rig access.

In the exploration program conducted by Norwest in 2012, one week of field mapping was completed to verify the geological observations reported from the 1979 and 1981programs. Most of the data points that were inspected are located in the North and South Blocks.

The exploration program also included the construction of trenches to expose the seams in various locations. A total of 12 trenches, in which the coal seams were well exposed, were constructed using a back hoe. Some, but not all, of these were permitted as “Deep Trenches” with a depth of 3 m. Roadside-cut shallow trenches were usually less than 1.2 m deep. When a trench intersected coal it was sampled as channels and this material was also sent to the laboratory for analysis. Samples taken from deep trenches are collected from the floor of the trench. These samples were then placed in cloth bags and bins for shipment to the laboratory. Incremental samples taken from the shallow trenches were collected from as far down the wall of the trench as possible. The 2012 trench locations can be found in Table 1.2 at the end of this section.

In 2012 NWP Coal also conducted a drilling and coal sampling program on the property. That program included 40 holes for a total penetrated depth of 5,707 m. Both coring and reverse circulation methods were employed to varying degrees of success which will be discussed in the applicable sections below. All of the holes in the program were geophysically logged except where poor hole conditions prevented it.

A total of nine angle holes and 31 vertical reverse circulation holes were drilled. Drilling was completed in three phases, after each phase was complete the hole locations were surveyed to obtain exact Nothing, Easting, and elevations of each drill hole.

TABLE 1.2
JAMESON RESOURCES LIMITED
CROWN MOUNTAIN COAL PROPERTY
2012 TRENCH SURVEY DATA

Trench ID	Survey Point	Northing (NAD 83)	Easting (NAD 83)	Elevation	Depth of Trench
PT1-1	Start	5522052.78	662526.589	2180.594	1.2
	End	5522018.942	662440.279	2144.865	
PT1-1	Start	5522052.78	662526.589	2180.594	3
	End	5522018.942	662440.279	2144.865	
PT1-2	Start	5522015.169	662421.426	2137.85	3
	End	5522007.402	662398.057	2131.774	
PT2	Start	5521627.474	662744.935	2144.921	up to 1.2
	End	5521662.003	662502.533	2094.969	
PT3	Start	5521946.468	662450.097	2136.785	up to 1.2
	End	5522011.038	662378.754	2125.141	
RT1	Start	5521670.02	662921.303	2166.938	up to 1.2
	End	5521650.157	662862.591	2171.721	
RT2	Start	5521547.319	662542.435	2075.196	up to 1.2
	End	5521514.627	662695.421	2087.581	
RT3	Start	5521593.278	662482.438	2067.958	up to 1.2
	End	5521691.622	662386.061	2060.347	
RT4	Start	5521447.006	662533.119	2039.613	up to 1.2
	End	5521515.047	662444.189	2030.036	
RT5	Start	5521800.574	662670.842	2162.19	up to 1.2
	End	5521835.895	662596.663	2159.195	
RT6	Start	5519204.665	663076.766	1886.564	1.2 to 1.5
	End	5519217.382	663064.729	1884.317	
RT7	Start	5518255.724	663759.251	1958.21	3
	End	5518229.127	663765.448	1957.69	

2 COSTS INCURRED

TABLE 2.1
JAMESON RESOURCES LIMITED
CROWN MOUNTAIN COAL PROPERTY
COSTS INCURRED

Cost Centre	Cost
Drilling	$538,346.25
Data Administration	$1,197.98
Environmental & Rehabilitation	$115,813.15
Economic Studies	$143,936.37
Exploration - Technical Services (including field costs)	$993,619.99
Laboratory and Coal Quality Test work	$92,118.59
Land Administration	$5,000.05
Surface Exploration	$16,370.21
Geophysics and Remote sensing	$92,892.73
Site Preparation	$395,305.90
TOTAL Expenditures	**$2,394,601.22**

3 DRILLING

I. Description

In 2012 Jameson conducted a drilling and coal sampling program on the Crown Mountain property. The program included 40 drill holes for a total cumulative depth of 5,707 m. All holes were drilled using a reverse circulation drilling rig and samples were collected using the reverse circulation method discussed in the Sampling section of this report. Thirty nine of the holes in the program were geophysically logged, one hole was not logged as it was abandoned early due to poor hole conditions. A minimum of 3 m and up to 29 m of casing was used in every hole depending on ground stability. Casing was typically removed once wireline logging was complete. Of the 40 drill holes, nine holes were drilled as angled holes, five of which were drilled on the same pad as a vertical hole. When the angled holes were drilled on the same pad as a vertical hole, the drill holes were named with the same root hole name. All but one of the directional drill hole names contain the suffix "B" while their corresponding vertical drill hole names typically contain the suffix "A". Angle drilling was used in order to obtain data as close as possible to the true thickness of the various units penetrated. Since the beds are folded there are usually two orientations of drilling that provide normal thickness data; northwest trending and easterly dipping beds may be drilled in a southwest direction. In these cases the angle holes were generally drilled at an azimuth of 250° (true) and a dip angle of 50°. For beds of the southwest dipping limb the angle holes were generally drilled at azimuths of 050° to 070° and at variable dip angles from 50° to 60°this data can be found in Table 3.1 in this section.

Construction for the 2012 drilling program began June 20, 2012. Construction of the new roads, drill pads and helicopter pads, as well as the filing of applications, permits and the Notices of Work, was carried out by Silenus Resource Management Inc. (Silenus). A summary of the work done by Silenus for the 2012 drilling program can be found in Appendix 1 of this report. Drill pads were constructed with sumps to collect the waste water that was injected and produced during drilling. Water used during the drilling was collected from ground water collecting sumps build along the road on Crown Mountain, and later from the flowing well CM11-16B.

Drilling services were contracted by Good Earth Drilling of Airdrie, Alberta. The drill was a track-mounted 2012 Novamac Exploro-Trac EWT-645 reverse circulation drill rig capable of drilling with air or water. All the reverse circulation holes were drilled with a 4¾ inch hammer. A 4¾ inch tricone bit was occasionally used when drilling problems were encountered. The rig had a cyclone system for accumulating the mixture of air, water and drilling cuttings for sample collection. The drilling equipment and crews were mobilized on August 8, 2012 out of Airdrie. The drilling operations ran 12 hours during the day only from August 9 to August 16. Rig operations ran continuously after August 16, with two 12 hour shifts per day. The crew for each shift consisted of a driller and two driller's helpers. During the day shift a drilling foreman from Good Earth Drilling and mine manager from either Jameson or Silenus were also present and

were on call during the night shift. A day shift and a night shift geologist were present at all times to supervise the coal sampling as well as to determine when total depth of the hole had been reached.

II. Drill Hole Summary

NWP Coal's 2012 drilling program was drilled in three phases through the months of August to November. Geologists monitored the drilling, examining and describing grab samples every 3 meters and determining when to start and stop sampling. Cuttings descriptions can be found in Appendix 2 of this report.

Phase one consisted of 23 proposed drill holes, 17 of which were on the Notice of Work (NOW) filed in 2011, with an additional six drill holes on five locations that were licensed in an amendment to the 2011 NOW. Phase one of the drilling program ran from August 9 to September 12, 2012. During this phase, only the North Block and South Block of the property were drilled. In total, 21 vertical drill holes and four angled drill holes were completed for a total cumulative depth of 3,577 m. All the angled holes of Phase One were drilled on pads that had corresponding vertical holes. Drill hole CM11-16C contains the suffix "C" in the well name because the hole was attempted three times, the first two attempts had to be abandoned early due to poor well conditions and flowing water respectively. Drill hole CM11-16B was drilled to 61 m before being abandoned due to flowing water; the hole was not sampled or logged, but was used as a water source until the flow dissipated. In Phase One, an attempt was made to sample the coal by coring using the reverse circulation rig. The core recovery was very poor and this sample method was not continued. A more detailed account of the problems encountered with coring will be discussed in the Coring section of this report.

Phase Two of the drilling program ran from October 2 to October 13, 2012. The holes drilled in this phase were licensed in the 2012 Notice of Work. During this period, 12 of the proposed 16 drill holes were completed for a total cumulative depth of 1,592 m, ten of the drill holes were drilled in the North Block and South Block and two holes were drilled in the Southern Extension Block. Of the 12 holes that were drilled, two were angled holes; the angled hole in the Southern Extension Block had a corresponding vertical hole. Two holes, CM12-34A and CM12-34B were the first holes drilled in the Southern Extension Block. Previously the only information that was available for this area was outcrop and trench data from earlier mapping programs in 1979 and 1981. These holes were located in the southern half of the Southern Extension Block. The confirmation of coal found in these two drill holes prompted further construction and drilling of the Southern Extension Block in Phase Three.

Phase Three drilling took place from November 15 to November 18, 2012. During this period, three of the six proposed wells were drilled for a total cumulative depth of 390 m. The drilling in Phase Three was done exclusively in the northernmost portion of the Southern Extension Block. The six proposed drill holes in this phase consisted of three drill pads, with a vertical and angled

hole on each. The angled holes were top priority, with the results from the angled hole determining whether or not to drill the corresponding vertical hole. The first drill hole of Phase Three, CM12-36B did not yield any coal with the exception of a marker bed that was outside of the target formation. Based on this data, it was decided not to drill the vertical hole. CM12-33B and CM12-38B yielded coal from 10 seam only; therefore no corresponding vertical holes were drilled.

TABLE 3.1
JAMESON RESOURCES LIMITED
CROWN MOUNTAIN COAL PROPERTY
2012 DRILL HOLE SUMMARY

HOLE NO	North (NAD83 UTM)	East (NAD83 UTM)	Elev (m)	TD(m)	Open Hole Log (m)	Pipe Log Depth (m)	Dip/Dir	Deviation Depth (m)	Casing (m)	Completed
CM-11-02	5522132.2	662609.5	2208.8	174.0	51.8	170.5	90	52	3.0	11/Aug/2012
CM-11-02B	5522137.4	662620.9	2209.0	144.0	143.0	139.0	50/061	143	3.0	21/Aug/2012
CM-11-03A	5521908.7	662482.9	2141.5	186.0	40.0	185.0	90	60	9.0	19/Aug/2012
CM-11-03B	5521908.7	662482.9	2141.5	125.0	na	106.0	50/250	na	9.0	16/Aug/2012
CM-11-04	5521985.6	662613.2	2200.2	184.0	34.0	179.0	90	33	12.0	14/Aug/2012
CM-11-07	5521855.7	662688.8	2184.4	163.0	162.0	158.0	90	162	9.0	20/Aug/2012
CM-11-08	5521673.2	662397.9	2059.5	82.0	80.0	76.0	90	80	3.0	23/Aug/2012
CM-11-11	5521515.0	662691.7	2086.9	142.0	140.0	139.0	90	139	3.0	22/Aug/2012
CM-11-12	5521636.0	662855.8	2170.8	116.0	115.0	112.0	90	115	3.0	16/Aug/2012
CM-11-14	5519290.7	663519.5	2000.3	136.0	na	133.0	90	na	18.0	25/Aug/2012
CM-11-15	5519114.7	663763.2	2021.3	141.0	82.0	135.0	90	138	12.0	05/Sep/2012
CM-11-16B	5518954.1	663556.9	1950.0	61.0	na	na	90	na	39.0	30/Aug/2012
CM-11-16C	5518954.1	663556.9	1950.0	111.0	na	108.0	90	na	24.0	03/Sep/2012
CM-11-17	5518711.1	663511.2	1954.7	169.0	na	163.0	90	na	15.0	29/Aug/2012
CM-11-18	5518475.2	663689.6	1957.3	109.0	na	92.0	90	43	12.0	26/Aug/2012
CM-11-19	5518158.4	663406.6	1885.2	172.0	163.0	159.0	90	165	12.0	28/Aug/2012
CM-11-20	5517897.8	663491.9	1861.6	131.0	127.0	128.0	90	127	9.0	27/Aug/2012
CM-11-21	5518820.9	663796.0	1988.4	62.0	na	57.0	90	na	24.0	04/Sep/2012
CM-11-22	5519706.7	663757.3	2121.2	166.0	166.0	na	90	166	12.0	24/Aug/2012
CM-11-22B	5519711.9	663754.7	2121.3	160.0	156.0	154.0	60/076	156	6.0	06/Sep/2012
CM-12-01A	5522045.6	662422.0	2143.0	178.0	177.0	173.0	90	177	9.0	08/Sep/2012
CM-12-01B	5522044.9	662420.5	2143.1	148.0	132.0	133.0	50/265	135	14.0	09/Sep/2012
CM-12-04	5521633.2	662596.8	2111.8	181.0	na	176.0	90	na	6.0	09/Oct/2012
CM-12-06	5521760.1	662509.2	2122.2	176.0	171.0	171.0	50/256	175	15.0	10/Oct/2012
CM-12-09	5522094.5	662352.1	2133.7	163.0	162.0	158.0	90	162	3.0	11/Sep/2012
CM-12-10	5522083.7	662417.2	2143.2	172.0	171.0	167.0	90	171	7.5	12/Sep/2012
CM-12-16	5521346.4	662709.0	2009.7	82.0	na	76.0	90	na	3.0	12/Oct/2012
CM-12-17	5521328.2	663512.3	2132.3	148.0	147.0	142.0	90	147	6.0	07/Oct/2012
CM-12-18	5520572.4	663809.1	2216.3	231.0	230.0	227.0	90	230	6.0	07/Sep/2012
CM-12-19	5520179.5	663792.6	2159.7	182.5	182.0	179.0	90	182	6.0	07/Oct/2012
CM-12-21	5519559.6	663069.1	1860.7	160.0	na	155.0	90	na	9.0	31/Aug/2012
CM-12-24	5519114.0	663015.3	1863.8	157.0	156.0	151.0	90	156	24.0	05/Oct/2012
CM-12-25	5519110.5	663231.6	1918.5	133.0	33.0	127.0	90	na	15.0	04/Oct/2012
CM-12-28	5518099.2	663752.2	1947.6	142.0	135.0	135.0	90	139	3.0	03/Oct/2012
CM-12-29	5518996.5	663414.9	1934.9	64.0	na	na	90	na	15.0	05/Oct/2012
CM-12-31	5521433.5	662557.5	2038.5	100.0	na	94.0	90	na	9.0	11/Oct/2012
CM12-33B	5516251.7	663477.7	1740.0	123.0	122.8	118.5	60/065	122.8	6.0	18/Nov/2012
CM12-34A	5514055.1	663762.5	1618.5	118.0	115.0	na	90	115	9.0	13/Oct/2012
CM12-34B	5514054.6	663761.3	1618.6	109.0	na	103.0	60/060	na	6.0	13/Oct/2012
CM12-36B	5515916.0	663440.5	1744.9	75.0	71.9	70.5	60/070	69.8	6.0	16/Nov/2012
CM12-38B	5516100.6	663442.3	1750.3	192.0	na	187.7	60/050	29	6.0	17/Nov/2012

III. Coring

There were a total of six core holes planned for the 2012 drilling program; three in the North Block and three in the South Block. The first core hole was attempted during phase one in the North Block at CM11-03A. Due to the thin and highly fractured nature of the coal seams the core recovery in the first four runs was very low. Most of the coal was crushed and lost during the coring process. While the rock recovery in the core was significantly higher than the coal, the fractured and jointed nature of the rock still resulted in poor recovery. The field photos shown in Appendix 3 highlight the poor core recovery. After this initial failed attempt at coring on CM11-03A the decision was made to not attempt coring another hole and to convert all the propose core holes to standard RC holes, all of which were drilled and sampled.

4 GEOPHYSICAL LOGGING

All of the geophysical logging in the 2012 drilling program was performed by Century Wireline Services Inc. of Red Deer County, Alberta. The wireline logging was done in four runs when hole conditions permitted. The first two runs were through the drill pipe, and the second two runs were run open hole. The first run through the drill-pipes was with a Gamma-Neutron tool, the second run was a Gamma-Density. After the first two runs, the drill pipe was pulled out of the hole and a Gamma-Neutron tool without a live source was run down hole to obtain a deviation log and assess hole conditions. If the hole conditions were deemed to be favorable, a live source Gamma-Density was run. If hole conditions were determined to be unfavorable, the fourth run was not attempted to avoid the possibility of a live source from becoming stuck down the hole. A total of 37 holes were logged through the pipe and 27 holes were logged open hole. The open hole logs did not always reach total depth due to poor hole conditions or collapse. In one hole, CM12-29, hole conditions were very poor and the decision was made to abandon the hole before any geophysical logs were run. The wireline logs can be found in Appendix 4 of this report.

5 COAL SAMPLING

The drilling and sampling for each drill hole was primarily done utilizing continuous water injection. It was initially decided that ideally the samples would be collected dry via air drilling, only using a very small amount of water to assist with dust suppression. However, dry drilling was often not possible due to the tendency for the drill pipe interchange to become blocked and prevent the samples from being sent into the cyclone. As well, the Health, Safety and Environment (HSE) issue of dust particulates in the air at surface around the crew made drilling with air a concern. Often, the relatively shallow water table resulted in wet samples, even when water wasn't being injected into the hole. Due to the inability to mitigate these issues, the majority of samples were wet and they were often mixed with a considerate amount of water.

When a coal interval was penetrated during reverse circulation drilling, cuttings samples were collected from the bottom of the cyclone for each 0.5 m of drilled depth through the seam. Additional samples were collected from below the seam interval to ensure that all of the seam material had been sampled. The sample material that came out the bottom of the cyclone was collected in a bucket. If the samples were wet, the contents were then poured over a 100 mesh screen and manually agitated back and forth to allow the majority of the water to drain through. The sample remaining on the screen was scooped into a prepared sample bag. Predominantly dry samples were deposited directly from the bucket into a sample bag. Samples from Phase One were put into plastic sample bags (drier samples) or synthetic polywoven bags (wetter samples, to allow for drainage). Samples from Phase Two and Phase Three were placed exclusively into polywoven cloth bags. Each bag was labeled on the outside with the hole ID/sample number for identification purposes. Each bag also contained a paper sample tag containing this information. Zip ties were used to close each sample bag. Samples were placed inside plastic tote bins and transported from the drill site to Sparwood in the back of a pickup truck after each hole was finished. Tote bins were kept in a storage facility until a large enough quantity was arranged to be transported. Rosenau Transport Ltd. of Sparwood transported the tote bins containing samples to GWIL –Birtley Coal Laboratory's in Calgary, Alberta for analysis and testing.

It should be noted that several issues related to drilling and sampling have affected the coal quality data. The coal samples tended to be of extremely fine size consist due to the use of a down-hole hammer in drilling. The screen sampling technique was inadequate to capture all of the fine particles, and a considerable amount of fines were able to pass through the 100 mesh screen. Two test samples were taken where the sample from on top of the 100 mesh screen and the water that drained off below the screen was captured and tested. The results of this test suggested that approximately 46% of the sample was passing through the 100 mesh screen. A screen of smaller mesh size wasn't practical to employ without having a shaker system set up. The use of synthetic polywoven bags also resulted in a small proportion of the fines to be lost along with the water which drained out of them. Plastic bags were impractical to use exclusively, as waterlogged samples were heavier to carry and transport and only served to extend the preparation time in the lab. Polywoven cloth bags were chosen as the preferred option, as they permitted the continuous drainage of water. This resulted in drier samples for the lab to process,

therefore decreasing the turnaround time for analytical results. Lastly, the presence of water and surrounding rock material would also have resulted in a certain degree of contamination of samples.

6 COAL ANALYSIS

Reverse circulation drilling in conjunction with geophysical logging is generally considered suitable for defining seam intercepts and collecting representative samples. For the 2012 program at Crown Mountain two issues, however, affected the samples and limited their usefulness. These are:

- the extremely fine size consist produced by hammer drilling in a small diameter hole; and
- some contamination of the samples due to the presence of water and similarly fine rock material from in-seam partings or out-of-seam rock.

There are other factors, both technical and operational, that may also have contributed to these limitations but it has not yet been possible to definitely assess these impacts. However, the combination of these limitations precluded the ability to conduct reliable washability studies, and often adversely affected several laboratory coal analysis procedures

A flow chart explaining the reverse circulation cuttings sample test plan is available in Appendix 5 of this report. The reverse circulation cuttings samples were used to prepare seam composite samples. The basis for compositing the samples included incremental sample ash content values combined with the depth and thickness results from geophysical logging.

Samples from depths less than 50 m were also tested to determine their oxidation state and this was considered in the preparation of the composite samples. The shallow samples were each tested for Free Swelling Index (FSI) and/or Light Transmittance in order to identify the samples that were oxidized. Then those results were used to separately identify oxidized and unoxidized coal seam sections. In cases where seams were found to be partly oxidized, separate composite samples were prepared.

The composite samples were then floated at a 1.5 SG cut point and both the head sample and the float fraction were tested for proximate analysis, FSI and light transmittance. Selected samples were also subject to rheology, ash chemistry, ash fusion, heat content and trace element analysis. Other selected samples were also subject to petrographic analysis. GWIL–Birtley Coal Laboratory in Calgary, using ASTM methods and procedures, completed the wet laboratory testing. A list of ASTM procedures applied to this program and a document describing GWIL – Birtley Coal Laboratory's quality control program and statement of qualifications can be found in Appendix 5 of this report. Coal Tech of Pennsylvania produced the petrography analysis. All quality data received to date from GWIL –Birtley Coal Laboratory and Coal Tech is included in Appendix 5.

7 GEOLOGICAL MAPPING

In 1979 Crows Nest Resources, a wholly owned subsidiary of Shell Canada Resources, commenced an exploration program on the property. The exploration work of that year included detailed geological mapping at a scale of 1:5,000; more than 50 km of chain-and-compass traverses were completed and the results were used to prepare a surface geological map, a copy of which is reproduced in Figure 7-1. In addition, seven trenches, totaling 1,024 m in length, were dug using a combination of hand trenching methods and mechanical excavation using a back-hoe. These trenches were typically 1 m deep and were generally located spaced along cross-section lines. The trench locations were surveyed and they are plotted on the map of Figure 7-1 (Crows Nest Resources Limited, 1980).

The 1980 program of Crows Nest Resources included further geological mapping. The area mapped is located south of the area addressed in the previous year and is now part of the South Block although it also covers part of the Southern Extension. Mapping was done at a reconnaissance level and at a detailed, 1:5,000 scale over selected portions of the area. No other exploration was conducted during that program. The results of the mapping are reproduced on the surface geology map of Figure 7-2 (Shell Canada Resources Ltd., 1981).

In 1981 Crows Nest Resources continued detailed geological mapping of the southern part of the property. This work was plotted at a scale of 1:5,000 and a geology map that resulted is reproduced on Figure 7-2. The exploration of that year also included the construction and sampling of twelve hand-dug trenches with a total length of 264 m. A survey of these sites was made and those records are available (Appendix H, Crows Nest Resources Limited, 1982).

In the exploration program conducted by Norwest in 2012, one week of field mapping was completed to verify the geological observations reported from the 1979 and 1981 programs. Most of the data points that were inspected are located in the North Block and South Block. These locations were used for historic data validation purposes but the chosen sites also aided drill hole prognosis for the drilling program that was then to follow. Aerial photos and Lidar data obtained by Norwest also aided in the mapping verification and selection of drill holes.

8 GEOLOGICAL SETTING

I. Regional Stratigraphy

The general stratigraphic succession is summarized on Figure 8-1. The Jurassic-Cretaceous Kootenay Group includes, from top to base, the Elk Formation, the Mist Mountain Formation, and the Morrissey Formation (Grieve and Ollerenshaw, 1989-2). The major coal bearing unit is the Mist Mountain Formation. The Kootenay Group conformably overlies the Fernie Formation. The regional geology of the property is shown on Figure 8-2.

The Fernie Formation

Grieve and Kilby state that: "The marine Fernie Formation, of Jurassic age, is the oldest stratigraphic unit in the block. It is primarily a recessive unit, in contrast to the overlying Kootenay Group. Its base is marked by a thin band of phosphorite and phosphatic shale, which gives way to dark gray shale, overlain by the Rock Creek Member, which is composed of brownish silty shale with thin black limestone beds. The overlying Grey Beds consist of medium brownish grey shale with interbeds of calcareous sandstone and impure limestone (Price, 1962). A glauconitic sandstone or shale unit (Green Beds) immediately underlies the uppermost unit, the Passage Beds, which is a coarsening-upward sequence of interbedded shale and sandstone transitional to the Morrissey Formation of the overlying Kootenay Group".

The Morrissey Formation

The base of the overlying Late Jurassic to Early Cretaceous Kootenay Group is marked by the Morrissey Formation which is resistant and easily mapped in most areas of its occurrence. It averages 40 m in thickness in the area, and consists of two members (Gibson, 1985). The lower Weary Ridge Member is predominantly a fine-grained, quartzose, argillaceous, calcareous and ferruginous sandstone. The upper Moose Mountain Member is the more resistant and consists predominantly of medium-grained quartz-chert sandstone. Thin interbeds of carbonaceous shale and coal occur locally within the Moose Mountain Member.

The Mist Mountain Formation

The economically important Mist Mountain Formation conformably overlies the Morrissey Formation. It is moderately recessive to moderately resistant depending on the proportion of resistant sandstone or conglomerate beds it contains. It averages 500 m in thickness in the Crowsnest coalfield. Mist Mountain Formation in the Crowsnest coalfield consists of an interbedded sequence of siltstone, sandstone, mudstone, shale, coal and conglomerate of predominantly nonmarine origin. Fine-grained clastic rocks tend to be dark grey because of their carbonaceous content, while the sandstones, which contain grains of quartz, chert and quartzite (Gibson, 1985), tend to be somewhat lighter in color.

The depositional environment for the Mist Mountain Formation is that of an interbedded sequence of sandstone, siltstone, mudstone, shale, and coal, with rare conglomerate. It represents sediment deposition on a non-marine delta plain which prograded eastward into the inland Fernie Sea, and which received terrigenous clastic material eroded from tectonically active uplands to the west (Gibson, 1977; Jansa, 1972). Sediments are believed to have been deposited on lower delta coastal plains and upper delta alluvial plains, with the former being restricted to the basal part of the section (Gibson, 1977; Jansa, 1972). Deposition in alluvial channels and flood plains is generally inferred, with the latter environment represented by deposits typical of levee, crevasse, splay, flood-basin and swamp or marsh settings (Gibson and Hughes, 1981). No marine or brackish water deposits have been identified within the section.

The Elk Formation

The Elk Formation, which gradationally overlies the Mist Mountain Formation, is the uppermost formation in the Kootenay Group. It is a relatively resistant nonmarine unit dominated by coarse clastic rocks and in the Crowsnest coalfield it varies in thickness from a maximum of 482 m on Sparwood Ridge (Gibson, 1985) to 155 m near McLatchie Creek (Grieve and Ollerenshaw, 1989). Thicknesses of 327 m (Grieve and Ollerenshaw, 1989) and 253.5 m (Gibson, 1985) have been recorded at Flathead Ridge and Mount Taylor, respectively. In general it decreases in thickness from west to east. It is composed of sandstone, siltstone, mudstone, shale, coal and, locally, conglomerate. Sandstone units tend to be more numerous and laterally continuous than those in the Mist Mountain Formation. Conglomerates are associated with sandstone units, and achieve greatest concentration and thickness within the thickest sections, that is, at the western edge of the coalfield. Siltstone is generally similar to that in the Mist Mountain Formation, with the exception of the light grey weathering, well-indurated "needle siltstones" (Gibson, 1977).

The Blairmore Group

The contact with the overlying Lower Cretaceous Blairmore Group occurs at the base of the Cadomin Formation, the basal unit of the nonmarine Blairmore Group. In the Crowsnest coalfield this contact is abrupt and scoured, but may be conformable, at least in the western part of the coalfield (Gibson, 1979; Ricketts and Sweet, 1985). The Cadomin Formation in the Crowsnest coalfield consists of one or more thick cliff-forming chert-pebble to cobble conglomerate beds separated by recessive greenish and maroon mudstone units with a locally developed thin bed of light grey, nodular-weathering micrite. The Cadomin Formation is gradationally overlain by the Lower Blairmore, which in the Crowsnest coalfield is a 455 m thick recessive sequence of greenish grey, grey and maroon mudstone, with interbedded siltstone, cherty sandstone, conglomerate and minor limestone (Ollerenshaw, 1981a). The conformably overlying Beaver Mines-Mill Creek Formation in the Crowsnest coalfield is a sequence of greenish grey and maroon mudstone, sandstone and conglomerate 1,875 m thick.

Unconformably overlying the Blairmore Group are two marine shale sequences of the Blackstone and Wapiabi Formations. These are separated by nonmarine sandstone and shale of the Cardium Formation of the Alberta Group.

The Mist Mountain Formation of the Jurassic-Cretaceous Kootenay Group is the primary coal-bearing unit on the property and encompasses all of the economic coal seams. It conformably overlies the Moose Mountain Member of the Morrissey Formation. Except where controlled by faulting in the northernmost part of the South Block, the Mist Mountain Formation is the formation which crops out at the surface. The Morrissey Formation conformably overlies the Fernie Formation; these units are separated by a transitional zone of interbedded shale and sandstone with the former having the same characteristics as those of the Fernie Formation. A marker bed, normally found 5 m to 10 m below the base of the Moose Mountain Member, was found in all drill holes on the property that penetrated to that depth.

Based on results from the 2012 drilling campaign, the North Block has a preserved thickness in the range from 43 m to 145 m of Mist Mountain Formation strata. The equivalent values for the South Block are from 72 m to 162 m. Similarly, on the Southern Extension the Mist Mountain sequence is from 55 m to 110 m thick.

The top of the underlying Morrissey Formation is located from about 2 m to 13 m below the 10 Seam Lower which is the deepest coal unit on the property. The contact is readily identifiable because the Morrissey Formation is a distinct, weathering-resistant unit. Above the 10 Seam is the 9 Seam; the roof of this seam in the North Block, and occasionally in the South Block, is a weathering-resistant blocky unit of fine-to-medium grained sandstone that commonly displays an orange weathering color, it is locally referred to as the Ridge Sandstone. Both the Ridge Sandstone and the sandstone of the Moose Mountain Formation are mapped at the surface at various locations throughout the property.

II. Regional Structure

The tectonic history of this region has produced structural deformation on every scale. Southeast British Columbia coalfields are part of the Lewis Thrust plate. This plate is characterized by features associated with the compressional Laramide tectonic regime during deformation of the Rocky Mountain front ranges in late Cretaceous and early Tertiary time, namely flexural slip folds with north to northwest trending axes, and west-dipping thrust faults. A period of extensional faulting followed in late Eocene and early Oligocene time (Price, 1965), some of which occurred on earlier thrust fault surfaces.

According to Grieve (1993):

"The Lewis Thrust Sheet in the Elk Valley Coalfield is bounded to the east by the outcrop of the Lewis Thrust Fault and to the west by the Bourgeau Thrust Fault. The

plane of the Lewis Thrust Fault has been folded by movement on a younger underlying thrust. Outcrop expressions of subsurface folds in the Lewis Thrust include the Alexander Creek Syncline and the Fording Mountain Anticline. The Alexander Creek Syncline underlies the entire length of the coalfield and encompasses the Line Creek Mine and the Eagle Mountain component of the Fording Coal Operation.

The Alexander Creek Syncline is the dominant structure in the Elk Valley Coalfield as it underlies the main body of the coalfield throughout its entire 97 km length. The syncline is generally upright but is locally steeply inclined. It is mainly an asymmetric fold, with the west limb being shorter in most cases." Grieve maps the Alexander Creek Syncline as being the large syncline that forms the mineable structure on the North Block of Crown Mountain.

A second significant structure on the Crown Mountain Coal Property appears to be the Ewin Pass Fault. Again, according to Grieve (1993) "The Ewin Pass Fault occurs in the east limb of the Alexander Creek Syncline throughout much of the south half of the coalfield. It may also continue southward from Line Creek to Crown Mountain, assuming that the Crown Mountain Fault is the same structure, although there is no direct evidence for this. Throughout its length it has had the effect of thickening the east limb by causing a repetition of strata. The Ewin Pass Fault has been depicted in the subsurface by Price and Grieve as a listric, west-dipping splay of the Lewis Thrust.

The Crown Mountain Fault has placed west dipping Fernie formation strata in the east limb of the Alexander Creek Syncline over west dipping strata of the lower part of the Mist Mountain Formation.".

III. Property Stratigraphy

The Mist Mountain Formation of the Jurassic-Cretaceous Kootenay Group is the primary coal-bearing unit on the property and encompasses all of the economic coal seams. It conformably overlies the Moose Mountain Member of the Morrissey Formation. Except where controlled by faulting in the northernmost part of the South Block, the Mist Mountain Formation is crops out at the surface. The Morrissey Formation conformably overlies the Fernie Formation; these units are separated by a transitional zone of interbedded shale and sandstone with the former having the same characteristics as those of the Fernie Formation. A marker bed, normally found 5 m to 10 m below the base of the Moose Mountain Member, was found in all drill holes on the property that penetrated to that depth.

Based on results from the 2012 drilling campaign, the North Block has a preserved thickness in the range from 43 m to 145 m of Mist Mountain Formation strata. The equivalent values for the

South Block are from 72 m to 162 m. Similarly, on the Southern Extension the Mist Mountain sequence is from 55 m to 110 m thick.

The top of the underlying Morrissey Formation is located from about 2 m to 13 m below the 10 Seam Lower which is the deepest coal unit on the property. The contact is readily identifiable because the Morrissey Formation is a distinct, weathering-resistant unit. Above the 10 Seam is the 9 Seam and the roof of this seam in the North Block, and occasionally in the South Block, is a weathering-resistant blocky unit of fine-to-medium grained sandstone that commonly displays an orange weathering color, it is locally referred to as the Ridge Sandstone. Both the Ridge Sandstone and the sandstone of the Moose Mountain Formation are mapped at the surface at various locations throughout the property.

IV. Property Structure

Grieve (1993) has suggested that the major structures, the Alexander Creek Syncline and the Ewin Pass Fault associated with and located to the east of it, both extend south onto the Crown Mountain Coal Property. The presence of the syncline on the Crown Mountain property has been recognized for a long time and the Crown Mountain Fault, Grieve's suggestion for the extension of the Ewin Pass Fault, has been well located by historic mapping on the property. These features cause the property to be broken into separate structural domains each with separate mining attributes or geological characteristics. These domains are referred to as the North Block, the South Block and the Southern Extension Block. The North Block lies west of the Crown Mountain Fault and occupies the Alexander Creek Syncline axial region. The South Block is located on the east side of the Crown Mountain Fault and is generally located somewhat further south than the North Block. The Southern Extension is the natural strike extension of the South Block and is contiguous with it.

The location of the North Block is shown to the west of the Crown Mountain Fault on the illustration of Figure 8-3. The North Block is thus situated on the hanging wall side of the fault as shown on the example cross-sections of Figures 8-5 and 8-6. On the property, the syncline is asymmetric with the west limb having a steeper dip than the east limb. The dip of the west limb is typically 55° while that of the east limb is 44°. The fold axis has a north-northwest trend.

The South Block is shown in the central and southern portions of Figure 8-3, on the east side of the Crown Mountain Fault. The South Block is thus located in the footwall sequence below this fault, as shown on the example cross-sections of Figures 8-7 and 8-8. In the past the structure of this part of the property was that of a monocline. However the 2012 drill hole data and reexamination of the outcrop data, show that the dip of the beds "flatten-out" as they approach the fault toward the southwest. This indicates that the original structure of these beds was a syncline that has been truncated by the thrust fault and only the east limb of the syncline remains. This interpretation is consistent with the regional observation of Grieve referred to previously.

The Southern Extension, as with the South Block lies to the east of the Crown Mountain Thrust Fault in the footwall sequence below the fault as shown on Figure 8-4. There is an erosional break between the structure of the South Block and the Southern Extension. Besides the Crown Mountain Fault, field mapping indicates the presence of at least one small scale thrust fault splays that appear to be developed from the Crown Mountain Thrust, as shown on the example cross-sections for the Southern Extension of Figures 8-9 and 8-10. However, the Southern Extension has not been explored to the same extent as has the North and South Blocks. More exploration in the Southern Extension is needed to fully define the structure of this area.

9 COAL GEOLOGY

I. Deposit Type

The definition of "Deposit Type" for coal properties is different from that applied to other types of geologic deposits. Criteria applied to coal deposits for the purposes of determination of coal resources and reserves include both "Geology Type" as well as "Deposit Type". For coal deposits this is an important concept because the classification of a coal deposit as a particular type determines the range of limiting criteria that may be applied during the estimation of Reserves and Resources.

"Geology Type" for coal deposits is a parameter that is specified in Geological Survey of Canada Paper 88-21, which is a reference for coal deposits as specified in NI 43-101. Coal "Geology Type" is a definition of the amount of geological complexity, usually imposed by the tectonic history of the area, and the classification of a coal deposit by "Geology Type" determines the approach to be used for the Resource/Reserve estimation procedures and the limits to be applied to certain key estimation criteria. The identification of a particular "Geology Type" for a coal property defines the confidence that can be placed in the extrapolation of data values away from a particular point of reference such as a drill hole.

The classification scheme of GSC Paper 88-21 is similar to many other international coal reserve classification systems but it has one significant difference. This system is designed to accommodate differences in the degree of tectonic deformation of different coal deposits in Canada. Four classes are provided for:

1. "Low" which is for deposits of the Plains type with low tectonic disturbance.
2. "Moderate" which is for deposits affected to some extent by tectonic deformation.
3. "Complex" which is for deposits subjected to relatively high levels of tectonic deformation.
4. "Severe" for Rocky Mountain type deposits which have been subjected to extreme levels of tectonic deformation.

The coal deposits of the Elk Valley Coalfield are typical of those for Inner Foothills and Rocky Mountain areas which have been subjected to a relatively high tectonic deformation. From place to place coal deposits of this type may be characterized by tight folds, some with steeply inclined or overturned limbs. These features can be seen in different parts of the coalfield but they are far from being universal.

The Crown Mountain Coal Property is divided into two distinct structural domains separated by a northerly trending thrust fault that is named the Crown Mountain Thrust Fault. These two domains exist as two distinct Geology Types.

On the northwest side of the thrust, located in the part of the property that is referred to as the North Block, there is a large syncline that is angular and tightly appressed. The axis of this fold is oriented at a shallow angle to the fault trend such that the fold axis and fault approach each other from the north boundary of the property in a southerly direction. The structure of this area is clearly more disturbed tectonically than other parts of the property and it has the features that cause it to be categorized as a Complex Geology Type.

The structure of the sequence on the east side of the fault is significantly different from this. There the structure is simply a westerly dipping monocline. This area is referred to as the South Block. The lower level of tectonic disturbance for this area allows it to be categorized as a Moderate Geology Type. There is a third portion of the property that is the strike extension of the South Block. This area is referred to as the South Extension. At present the South Extension area has been explored to a much lesser extent than has both of the other two blocks. At present this area is categorised the same as the area that it adjoins to the north. Thus the South Extension is categorised as a Moderate Geology type.

"Deposit Type" as defined in GSC Paper 88-21 refers to the extraction method most suited to the coal deposit. There are four categories, which are:

- surface;
- underground;
- non-conventional; and
- sterilized.

Crown Mountain is close to important infrastructure including major roads, rail, power and a mining town site. These features will be important for the development of the property. Because of the nature of the terrain and the geology of the area Crown Mountain is suitable for the planning of development using surface mining methods. However, investigations are presently being undertaken to determine whether some forms of underground mining may also be applicable.

II. Coal Occurrence and Mineralization

For coal deposits, "mineralization" refers to coal development and coal seam stratigraphy.

According to Grieve and Kilby (1989), within a complete stratigraphic section, "Coals in the Mist Mountain Formation are almost exclusively humic. Original banding has often been destroyed by shearing associated with Laramide deformation. They form an average of 10 % of the total thickness of the formation in seams which range from less than 1.0 m to greater than 15.0 m in thickness. Coal seams do not tend to cluster in any part of the stratigraphic section, and the only horizon which is consistently coal-bearing is the basal 20.0 m to 25.0 m of the formation".

However it must be noted that the Mist Mountain Formation section in the Crown Mountain area is an erosional remnant. The whole of the section is not present on this property. The sequence on the property is known to include, in the most complete stratigraphic section, only Seam 8, at the top, through Seam 10 at the base and the various plies and splits of these seams. The seam nomenclature that is used corresponds with that at the Line Creek Mine to the north. The coal seam sequence for the property is shown on Figure 9-1.

Drilling has penetrated three principal seams on the property. The principal seams are named 8 Seam, 9 Seam and 10 Seam but 8 Seam and 10 Seam have been found to consist of three plies in each case. These plies are generally persistent across the property and each ply has thus been recognized as a separate seam. The term "Major Seam" has been has been defined to include all seven of these seams in order to distinguish them from other coal horizons, referred to as "Rider Seams" which also occur in the sequence. Thus there are a total of seven major seams and these are named the 8 Upper, 8 Middle, 8 Lower, 9, 10 Upper, 10 Middle, and 10 Lower Seams. These names are presented in descending stratigraphic order. Table 9.1 is a summary of the net coal average thicknesses for the major seams.

TABLE 9.1
JAMESON RESOURCES LIMITED
CROWN MOUNTAIN COAL PROPERTY
SUMMARY OF MAJOR SEAM AVERAGE NET COAL THICKNESS

Seam Name	North Block Average Thickness (m)	South Block Average Thickness (m)	Southern Extension Average Thickness (m)
8 Upper	12.47	-	-
8 Middle	4.27	-	-
8 Lower	3.74	3.3	-
9	4.68	3.06	10.1
10 Upper	7.56	3.09	3.29
10 Middle	1.08	3.97	1.4
10 Lower	1.52	1.62	-
Combined Average	**35.32**	**15.04**	**14.79**

As Table 9.1 shows there is a significant difference in the combined net coal thickness for the North and South Blocks. However this is due to the fact that the upper plies of 8 Seam are eroded in that area, as they appear to be in the Southern Extension.

It has also been found that several of the seams have splits or "Rider Seams" associated with them from place-to-place. These riders are typically thinner and usually not as laterally continuous as the seams with which they are associated; the rider seams have been named with a

prefix according to their overlying seam. From place-to-place the rider seams achieve mineable thickness. Table 9.2 shows the typical average net coal thickness for the rider seams on the property.

TABLE 9.2
JAMESON RESOURCES LIMITED
CROWN MOUNTAIN COAL PROPERTY
SUMMARY OF RIDER SEAM AVERAGE NET COAL THICKNESS

Seam Name	North Block Average Thickness (m)	South Block Average Thickness (m)	Southern Extension Average Thickness (m)
8 Rider	0.98	2.10	-
9 Rider	1.85	0.85	2.52
10 Middle Rider	-	0.78	-
Combined Average	**2.83**	**3.73**	**2.52**

Table 10.1 contains data that remain confidential under the terms of the *Coal Act Regulation*, Section 2(1). It has been removed from the public version.

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/10_251_2004#section2

11 CONCLUSIONS

Norwest field staff participated in the exploration and drilling activities for 2012 on the Crown Mountain Coal Property on behalf of NWP Coal Canada. The purpose of the 2012 drilling program was to verify the presence, depth and thickness of the coal on the property that had been suggested by legacy drilling and mapping, and to obtain coal quality data from samples taken during drilling. A geologic model, originally constructed using legacy data, was updated and refined through the interpretation of the 2012 drill hole results, wireline logs, and coal quality data. The updated geologic model was then used to calculate a resource estimate for the property.

12 AUTHOR'S QUALIFICATIONS

1. I am currently employed as Senior Geologist by Norwest Corporation, Suite 2700, 411 – 1st Street SE., Calgary, Alberta, Canada T2G 4Y5.

2. I graduated with a Bachelor of Science degree from the University of New South Wales in 1971.

3. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta, (Member #22095) and the Association of Professional Engineers and Geoscientists of BC, (#30827).

4. I have worked as a geologist for a total of forty two years since my graduation from university. My work experience includes twenty-six years of exploration and mining support on a variety of coal properties around the world. I conducted sampling and supervised drilling at various locations in this coal basin adjacent to this property in the Fall of 1989 and Spring of 1990. I performed numerous geological interpretations and analyses during that period.

Dated at Calgary, Alberta this day of March 31, 2013.

"ORIGINAL SIGNED AND SEALED BY AUTHOR"

Geoff Jordan, P. Geol., P. Geo.
Senior Geologist

NORWEST
CORPORATION

I, Michelle Eskrick, P.Geol., do hereby certify that:

1. I am a geologist employed by Norwest Corporation, Suite 2700, 411 – 1st Street SE., Calgary, Alberta, Canada T2G 4Y5, since December 2010.
2. I received a Bachelor of Science in Geology from the University of Alberta in 2005.
3. I have worked as a geologist since 2005.
4. I have been a registered Professional Geologist with APEGGA since December 2011(# 74268).
5. I was directly involved with the 2012 mapping, drilling and sampling program on the Crown Mountain property.

Dated at Calgary, Alberta this day of March 31, 2013.

"ORIGINAL SIGNED AND SEALED BY AUTHOR"

Michelle Eskrick, P.Geol.

NORWEST
CORPORATION

I, Lauren Boutilier, Geol I.T., do hereby certify that:

1. I am a geologist employed by Norwest Corporation, Suite 2700, 411 – 1st Street SE., Calgary, Alberta, Canada T2G 4Y5, since January 2009.
2. I received a Bachelor of Science in Geology from the University of Calgary in 2008.
3. I have worked as a geologist since 2009.
4. I am registered as a Geologist in Training with the Association of Professional Engineers and Geoscientists of Alberta.
5. I was directly involved with the 2012 mapping, drilling and sampling program on the Crown Mountain property.

Dated at Calgary, Alberta this day of March 31, 2013.

"ORIGINAL SIGNED AND SEALED BY AUTHOR"

Lauren Boutilier, Geol. I.T.

13 REFERENCES

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2. Crows Nest Resources Limited (1980): Crown Mountain Coal Exploration Report 1979. Coal Assessment Report 391, BC Ministry of Energy Mines and Petroleum Resources.

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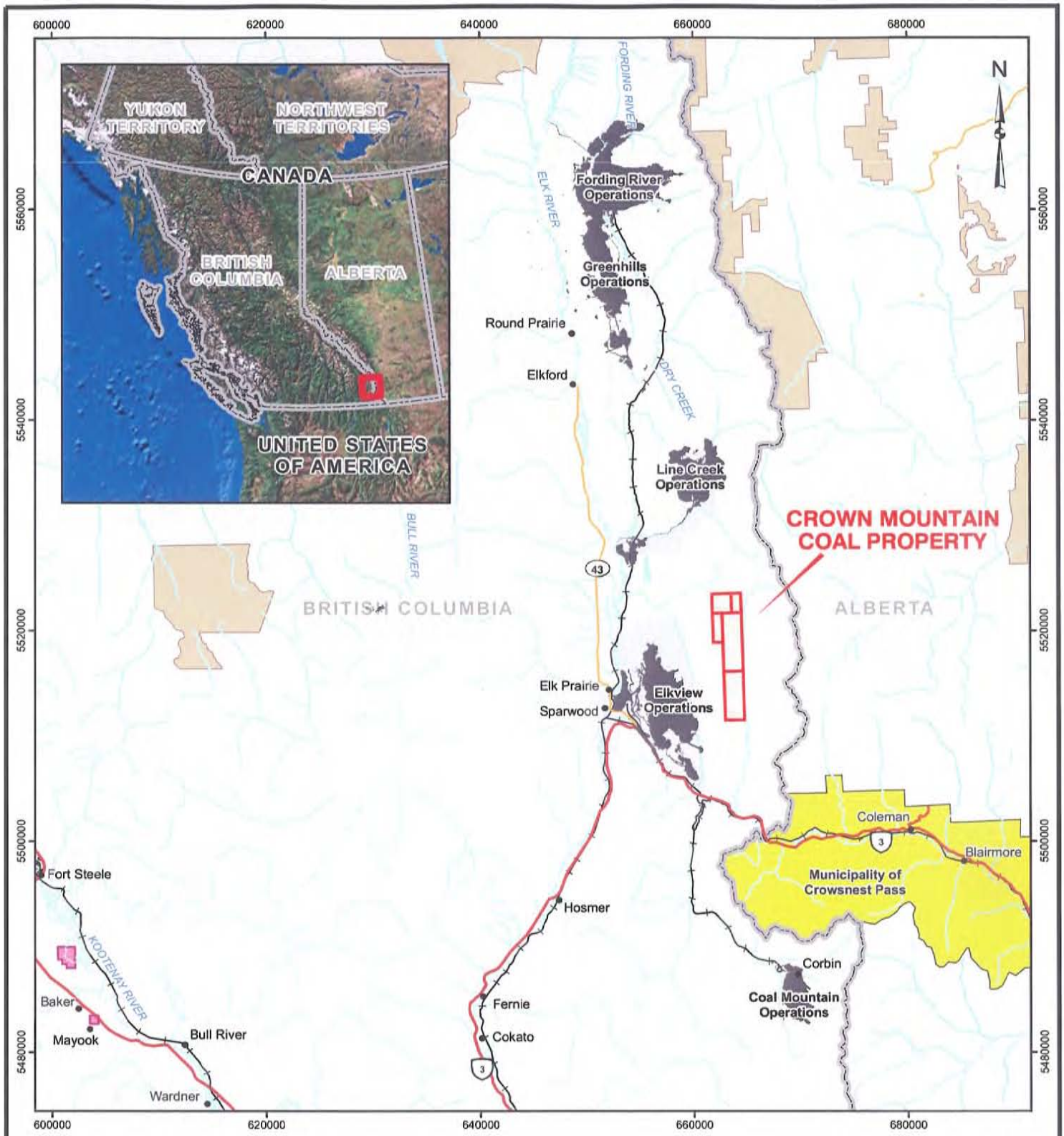


LEGEND

- CITY / TOWN / COMMUNITY
- PROJECT LOCATION
- CANADIAN PACIFIC RAILWAY
- PRIMARY HIGHWAY
- SECONDARY HIGHWAY
- WATERCOURSE
- COAL MINING OPERATION
- EAST KOOTENAY REGIONAL DISTRICT
- FIRST NATIONS RESERVE
- PROVINCIAL PARK
- WATERBODY

MUNICIPAL DISTRICT

- ELKFORD MUNICIPAL DISTRICT
- SPARWOOD MUNICIPAL DISTRICT
- JAMESON COAL LICENSE

REFERENCE

Provincial boundaries, cities, First Nations Reserves and transportation data obtained from ESRI and DMTI. Protected areas obtained from Geogratis. Hydrography data obtained from IHS Energy. Imagery obtained from WorldSat International.
Projection: UTM Zone 11 Datum: NAD 83

15 0 15
KILOMETRES

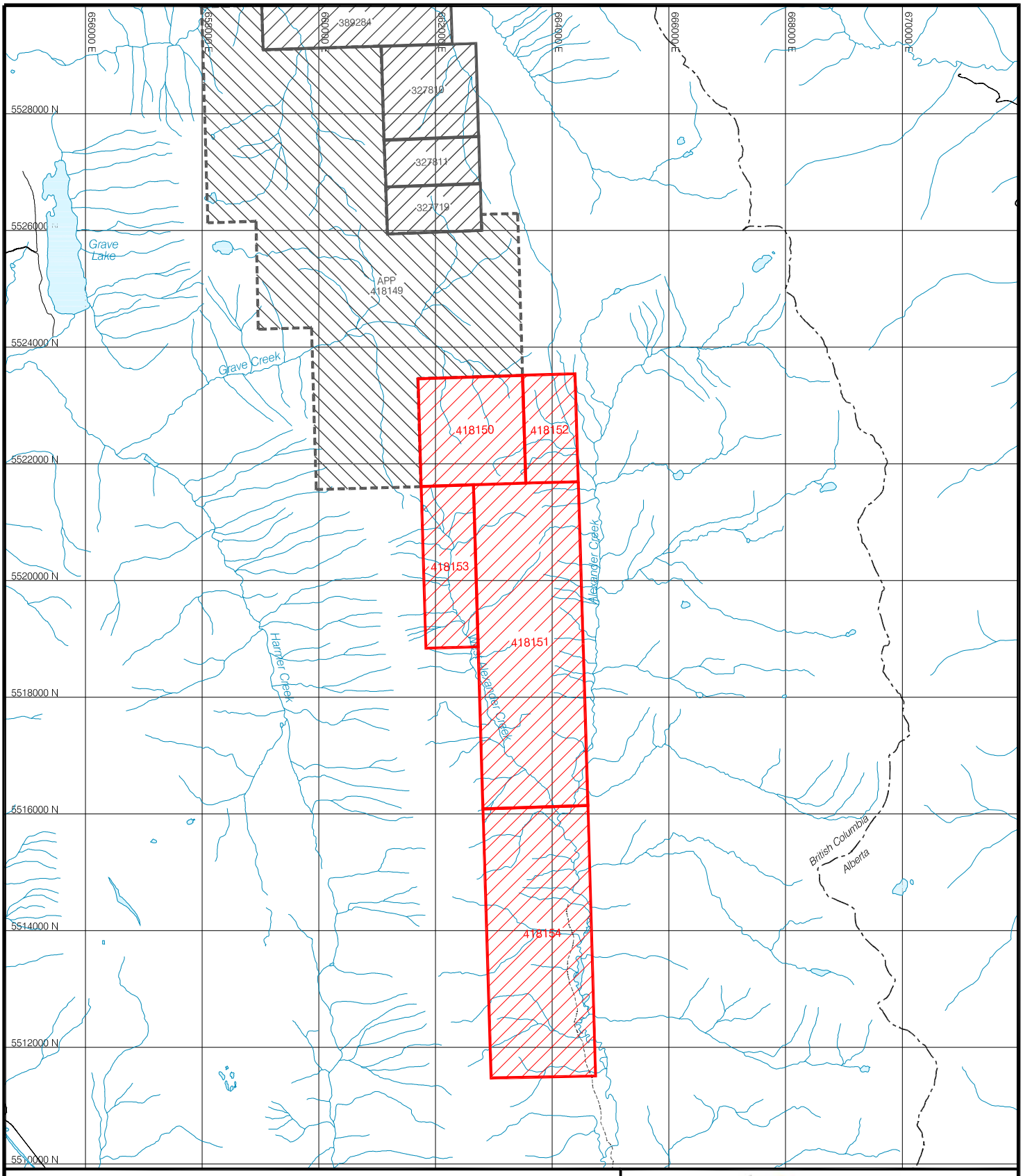
Jameson
RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

REGIONAL LOCATION MAP

FIGURE 1-1

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 02 28	FILE: Fig 1-1 Regional Location Map.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\Assessment Report\Figures	NORWEST APEGGA Permit P05015



JAMESON COAL LICENSE

OTHER COAL LICENSE

COAL APPLICATION

1000 500 0 1000 2000

Metres

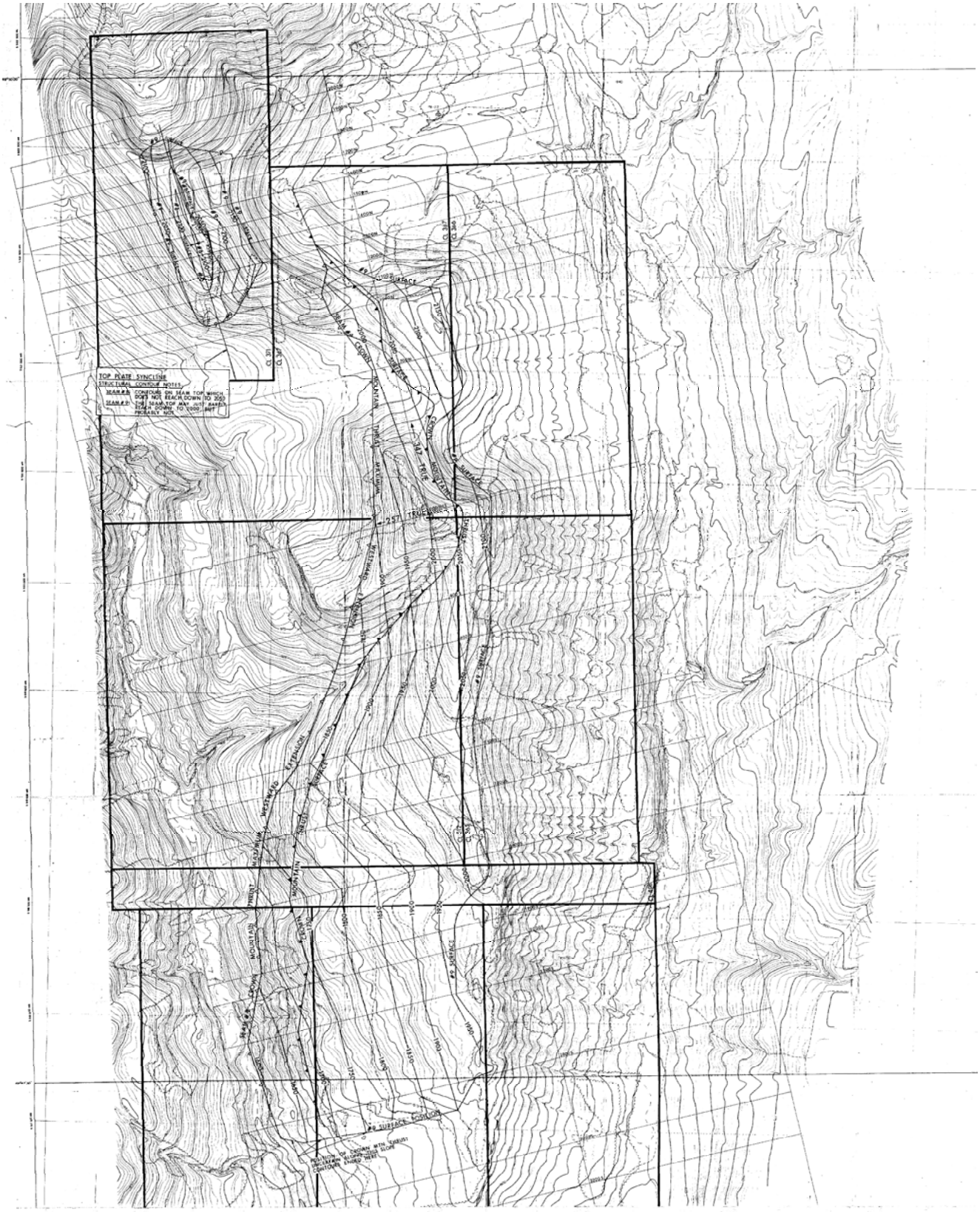
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

COAL LICENSE TENURE MAP

FIGURE 1-2

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 1-2 Coal License Tenure Map.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



N

500 250 0 500

Metres

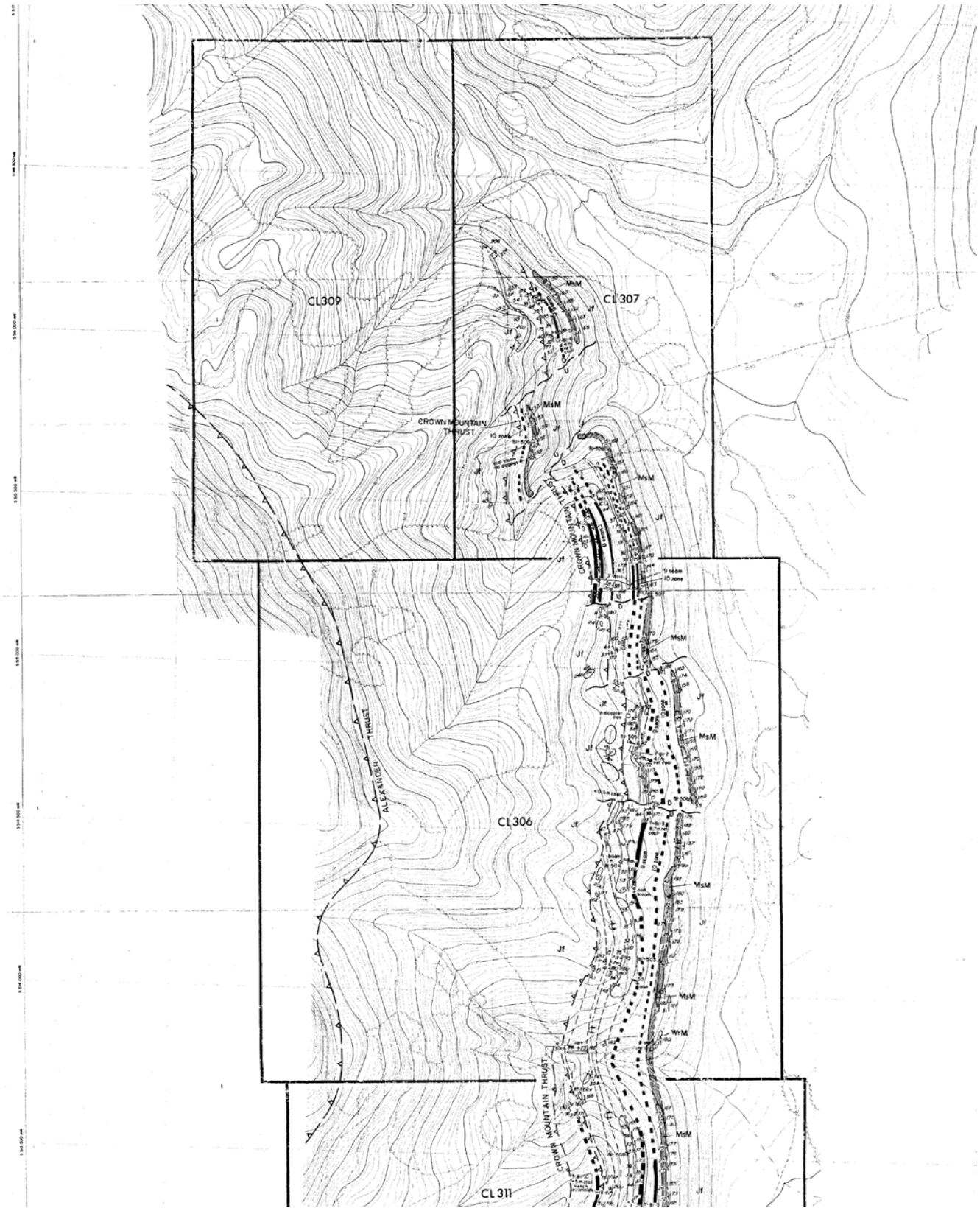
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

HISTORIC GEOLOGY MAP
North & South Blocks

FIGURE 7-1

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 7-1 Historic Geo Map_N & S Blocks.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\Assessment Report\Figures	NORWEST APEGGA Permit P05015



N

300 150 0 300

Metres

Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

HISTORIC GEOLOGY MAP
Southern Extension Block

FIGURE 7-2

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 7-2 Historic Geo Map_South Extension... G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015

PERIOD	GROUP	FORMATION MEMBER	ROCK TYPES
Lower Cretaceous	BLAIRMORE GROUP	Upper Blairmore (Undivided)	Massive bedded sandstones and conglomerates
		Cadomin Formation	
Lower Cretaceous to Upper Jurassic	KOOTENAY GROUP	Elk Formation	Sandstone, siltstone, shale, mudstone, chert pebble conglomerate and minor coal seams.
		Mist Mountain Formation	Sandstone, siltstone, shale, mudstone, and thick coal seams.
		Morrissey Formation	Medium to coarse grained, slightly ferruginous quartz-chert sandstone.
Jurassic	FERNIE GROUP	Fernie Formation	Shale, siltstone, fine-grained sandstone.

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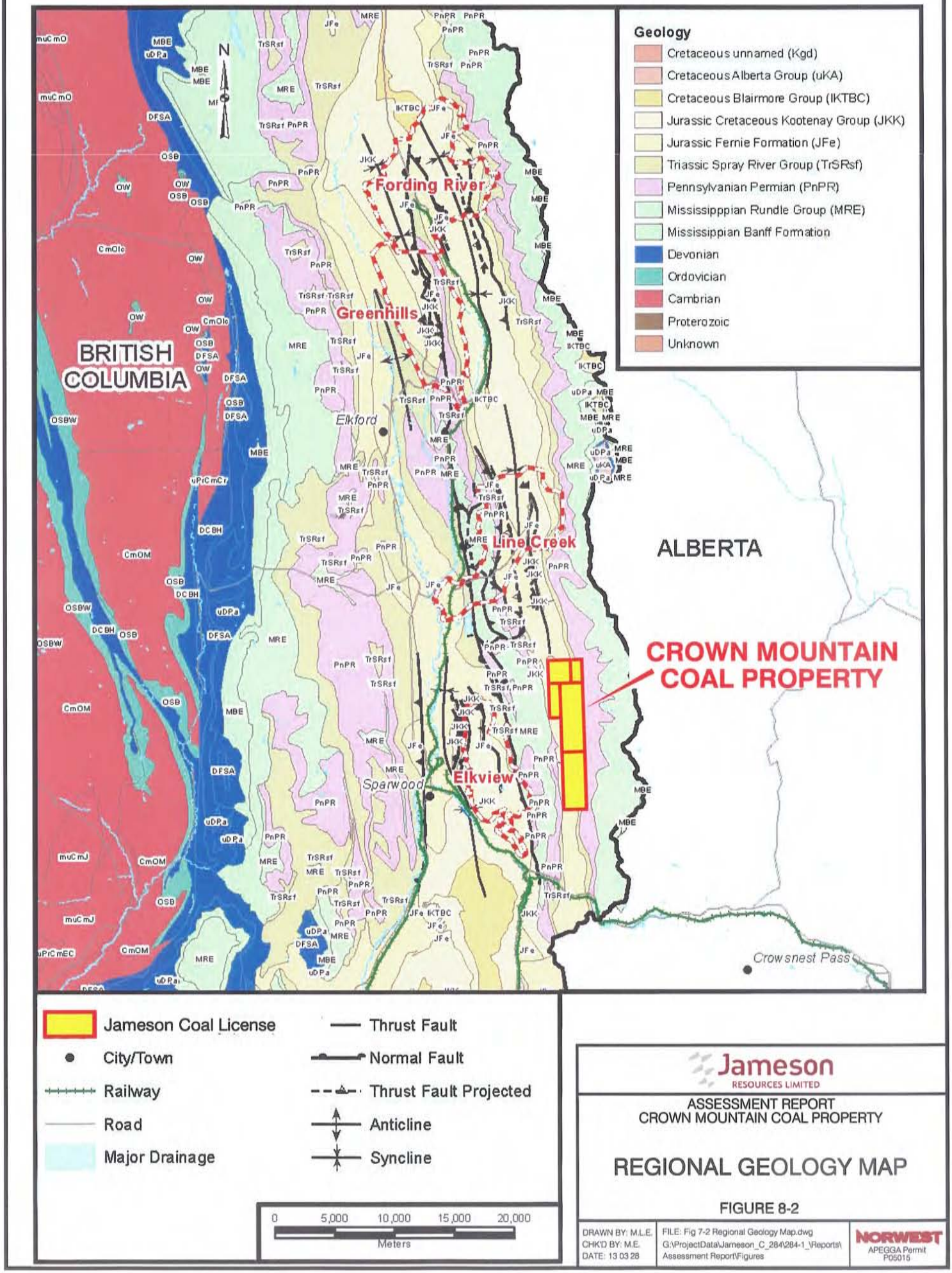
RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

TABLE OF FORMATIONS

FIGURE 8-1

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 8-1 Table of Formations.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



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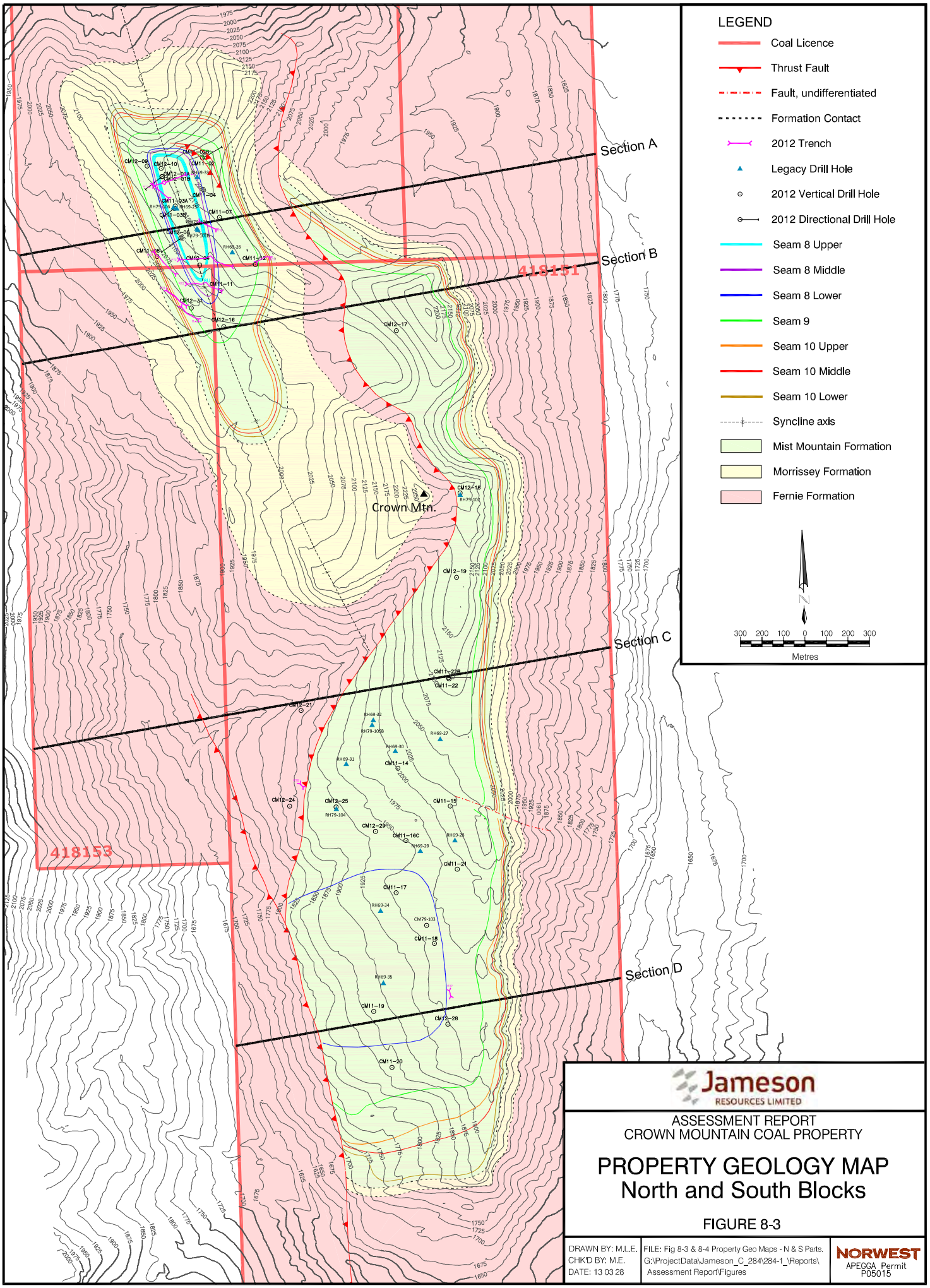
RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

REGIONAL GEOLOGY MAP

FIGURE 8-2

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 7-2 Regional Geology Map.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\Assessment Report\Figures	NORWEST APEGGA Permit P05015



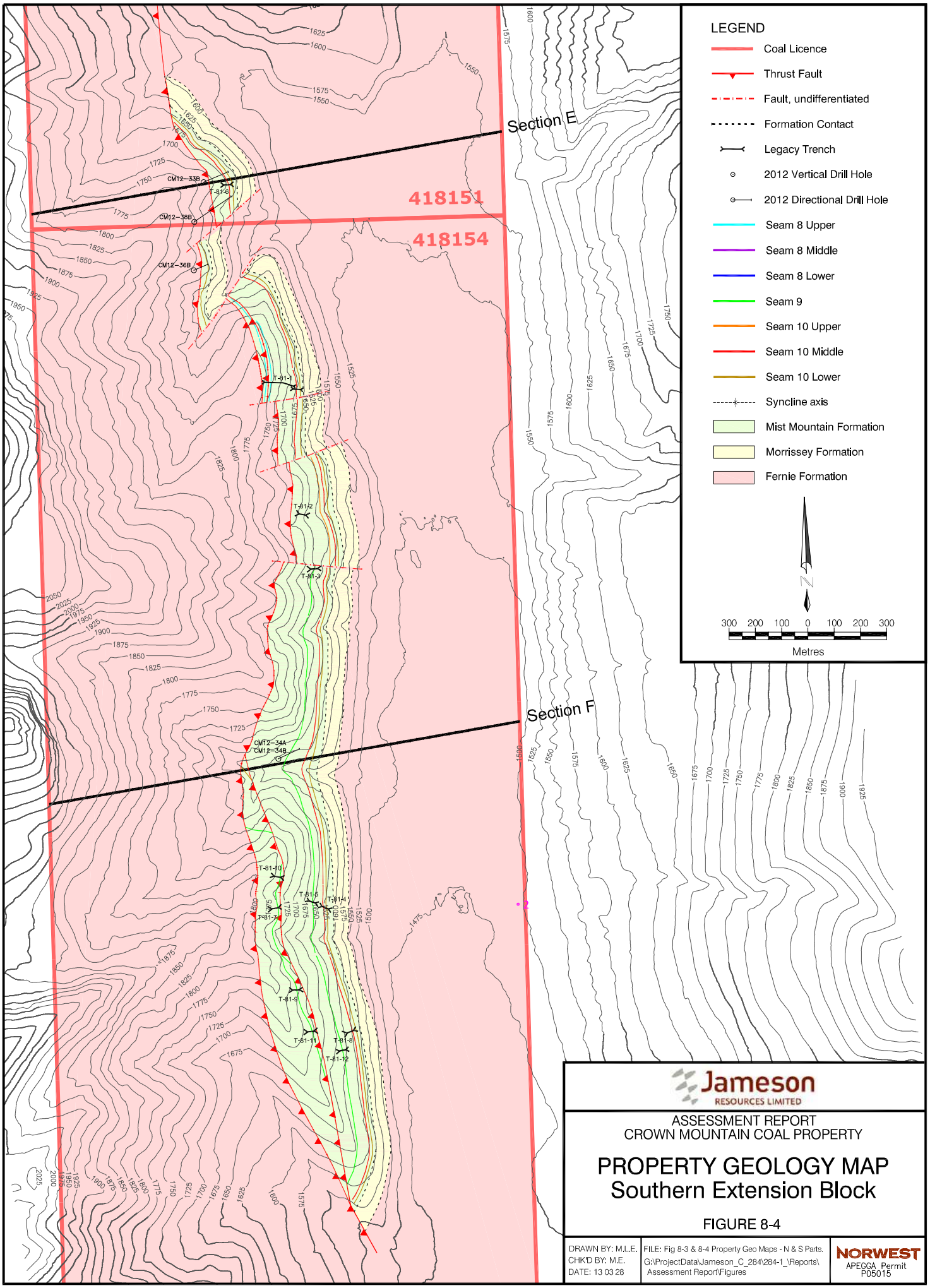
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

PROPERTY GEOLOGY MAP
North and South Blocks

FIGURE 8-3

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 8-3 & 8-4 Property Geo Maps - N & S Parts. G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



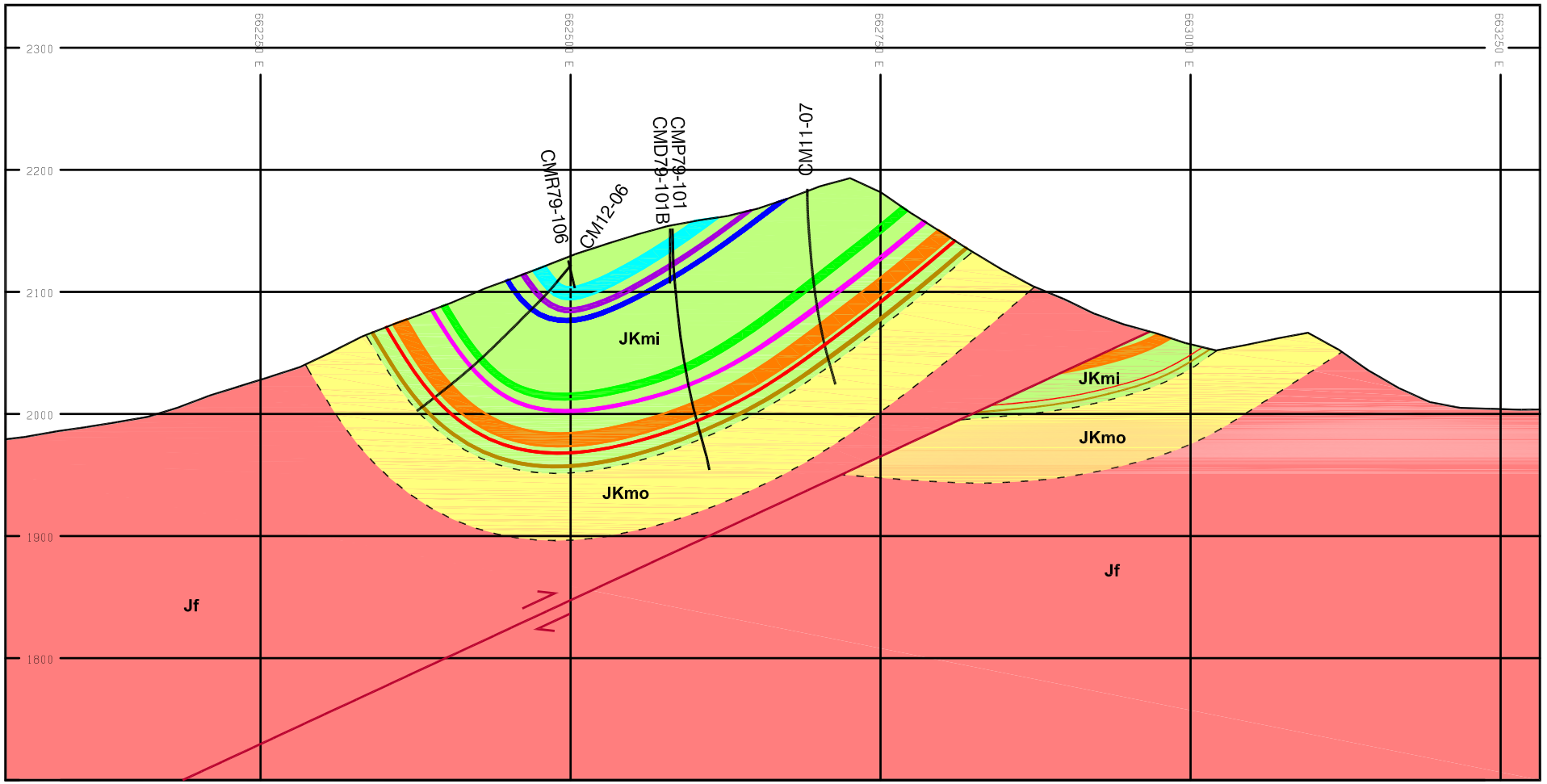
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

PROPERTY GEOLOGY MAP
Southern Extension Block

FIGURE 8-4

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 8-3 & 8-4 Property Geo Maps - N & S Parts. G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



LEGEND

- Topography
- Contact
- Seam 8 Upper
- Seam 8 Middle
- Seam 8 Lower
- Seam 8 Rider
- Seam 9
- Seam 9 Rider
- Seam 10 Upper
- Seam 10 Middle
- Seam 10 M Rider
- Seam 10 Lower
- Mist Mountain Formation
- Morrissey Formation
- Fernie Formation

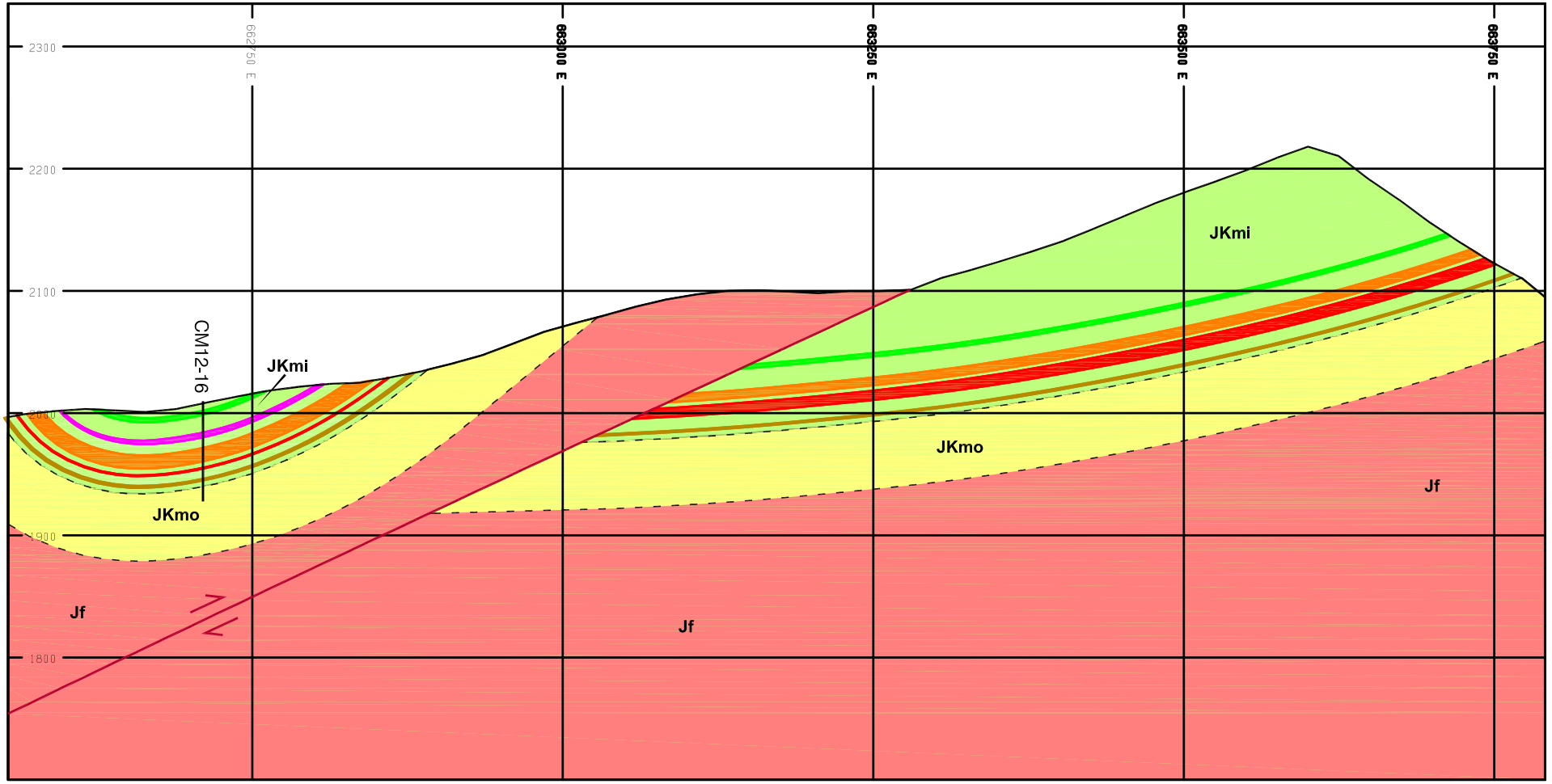
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

CROSS SECTION A-A'

FIGURE 8-5

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 8-5_Cross Section A-A'.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



LEGEND

- Topography
- Contact
- Seam 8 Upper
- Seam 8 Middle
- Seam 8 Lower
- Seam 8 Rider
- Seam 9
- Seam 9 Rider
- Seam 10 Upper
- Seam 10 Middle
- Seam 10 M Rider
- Seam 10 Lower
- Mist Mountain Formation
- Morrissey Formation
- Fernie Formation

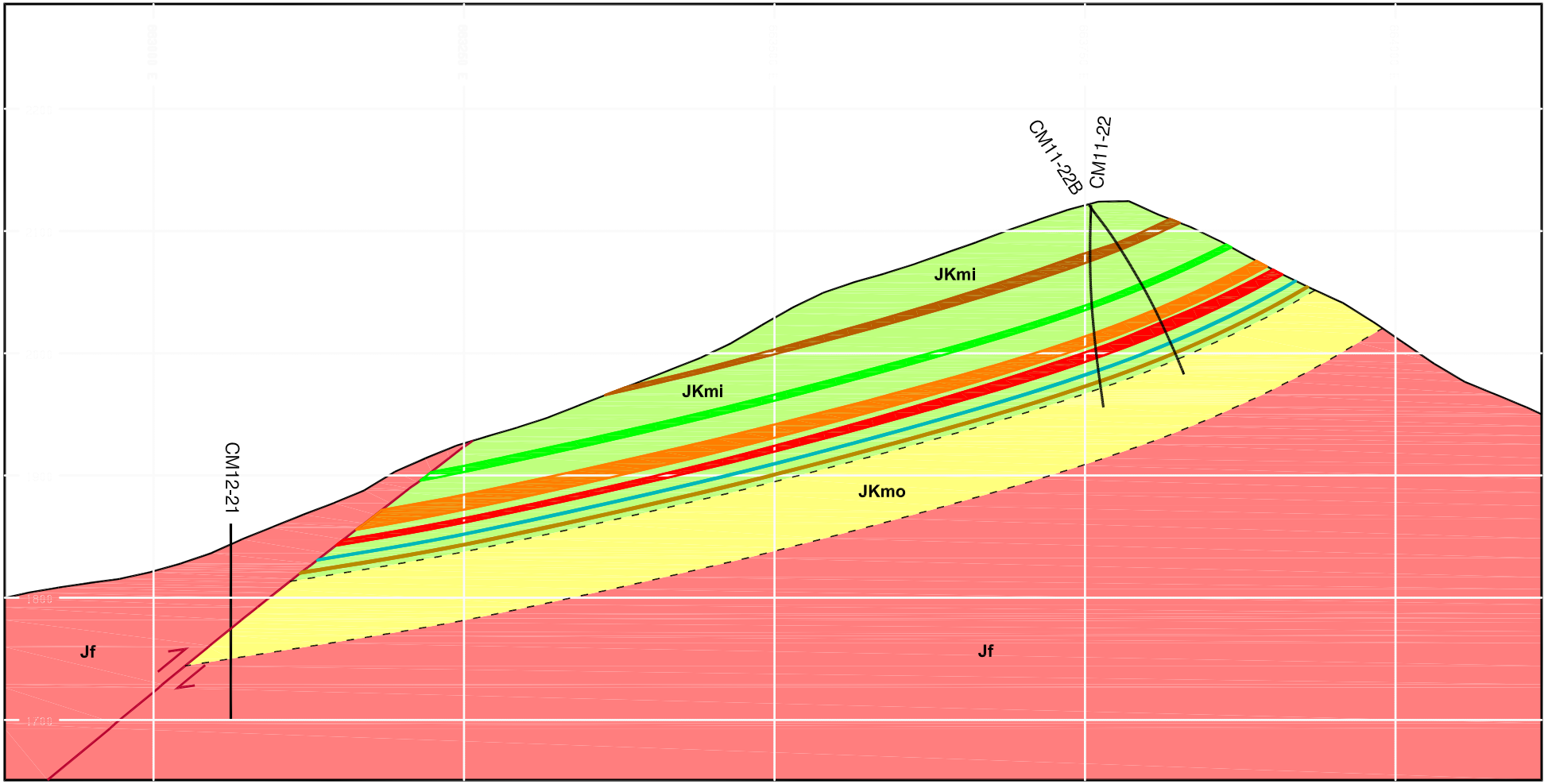
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

CROSS SECTION B-B'

FIGURE 8-6

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 8-6_Cross Section B-B'.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



LEGEND

- Topography
- Contact
- Seam 8 Upper
- Seam 8 Middle
- Seam 8 Lower
- Seam 8 Rider
- Seam 9
- Seam 9 Rider
- Seam 10 Upper
- Seam 10 Middle
- Seam 10 M Rider
- Seam 10 Lower
- Mist Mountain Formation
- Morrissey Formation
- Fernie Formation

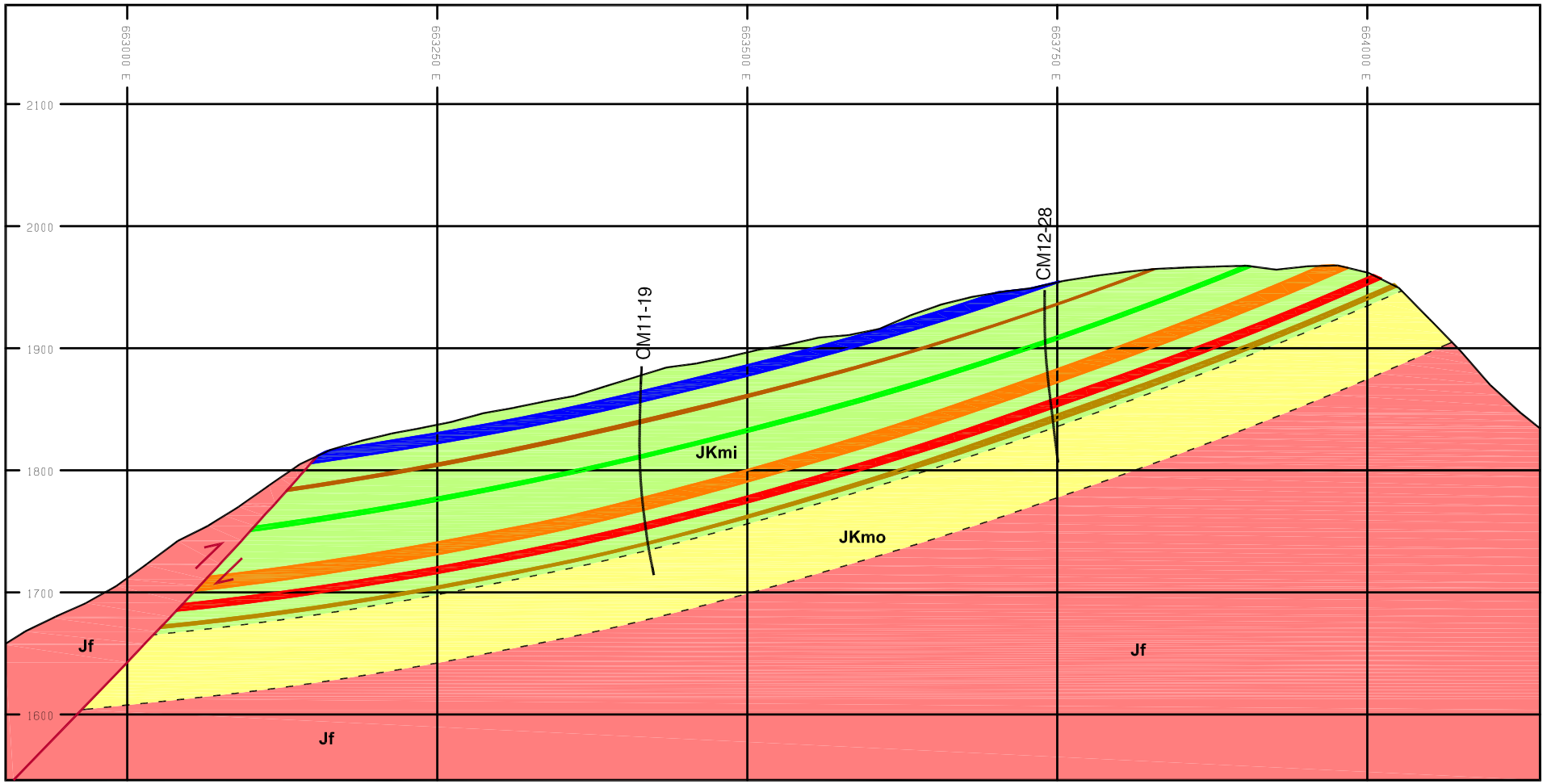
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

CROSS SECTION C-C'

FIGURE 8-7

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 8-7_Cross Section C-C'.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\Assessment Report\Figures	NORWEST APEGGA Permit P05015



LEGEND

- Topography
- Contact
- Seam 8 Upper
- Seam 8 Middle
- Seam 8 Lower
- Seam 8 Rider
- Seam 9
- Seam 9 Rider
- Seam 10 Upper
- Seam 10 Middle
- Seam 10 M Rider
- Seam 10 Lower
- Mist Mountain Formation
- Morrissey Formation
- Fernie Formation

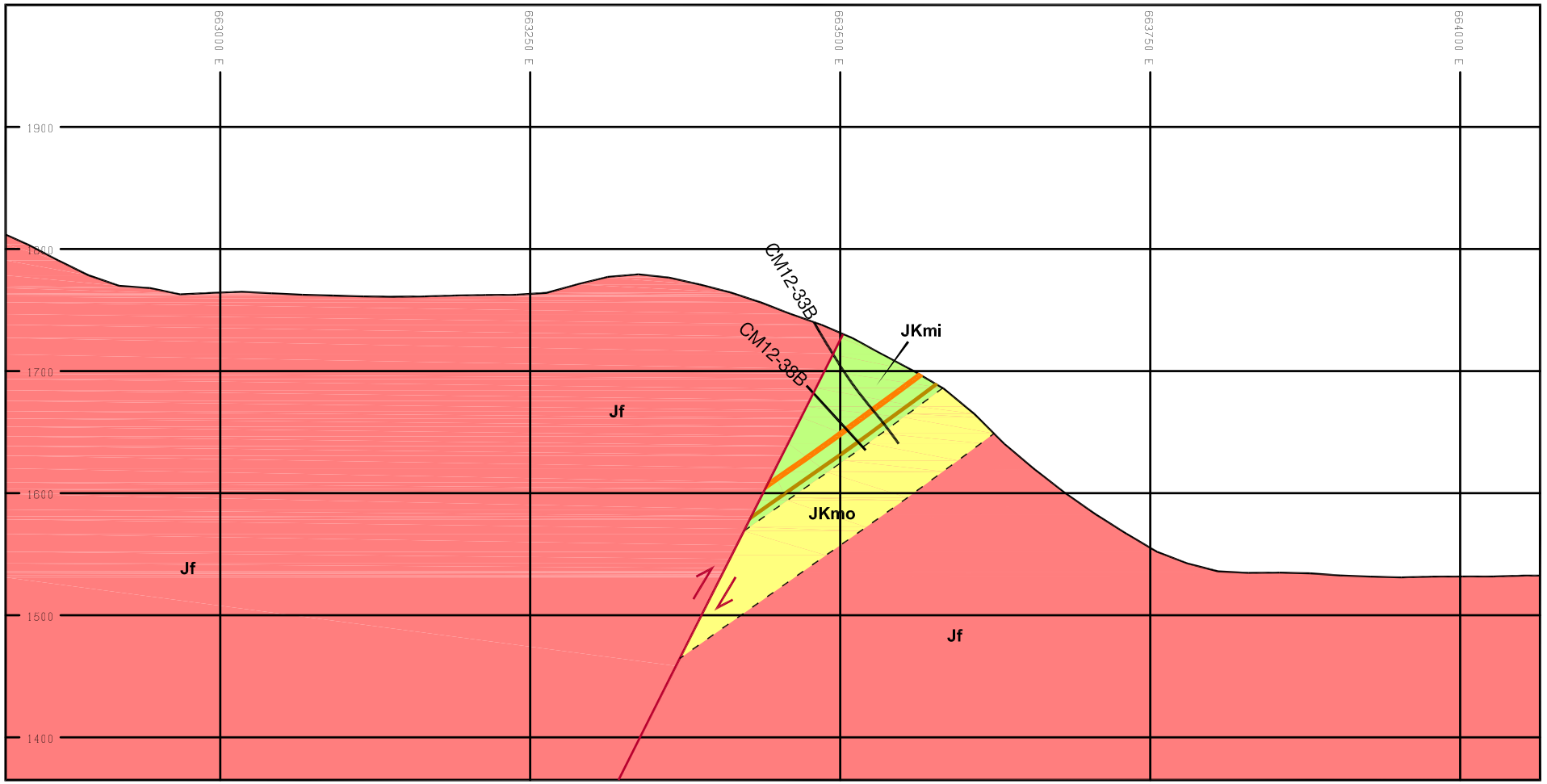
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

CROSS SECTION D-D'

FIGURE 8-8

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 8-8_Cross Section D-D'.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



LEGEND

- Topography
- Contact
- Seam 8 Upper
- Seam 8 Middle
- Seam 8 Lower
- Seam 8 Rider
- Seam 9
- Seam 9 Rider
- Seam 10 Upper
- Seam 10 Middle
- Seam 10 M Rider
- Seam 10 Lower
- Mist Mountain Formation
- Morrissey Formation
- Fernie Formation

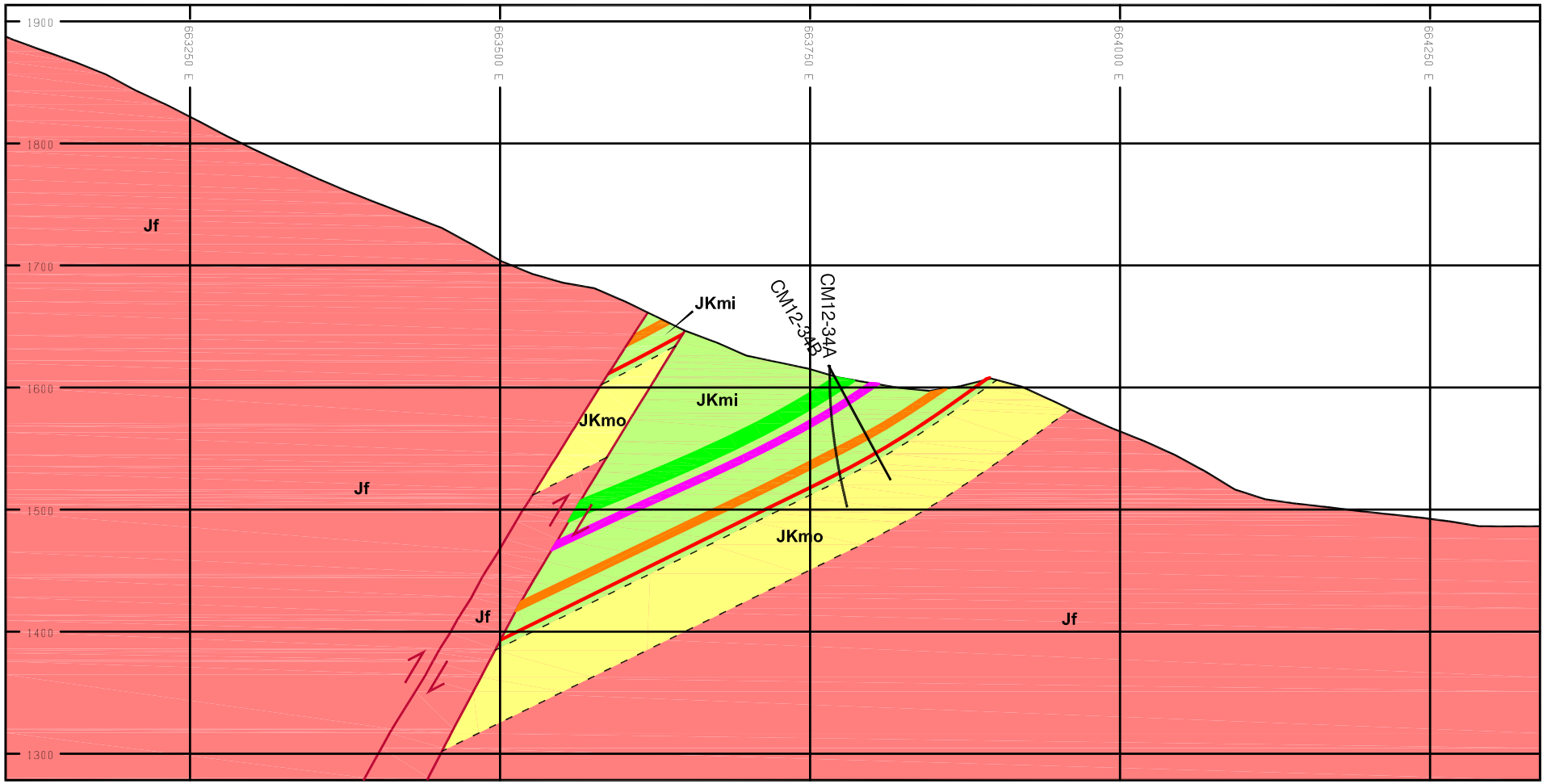
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

CROSS SECTION E-E'

FIGURE 8-9

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 8-9_Cross Section E-E'.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



LEGEND

- Topography
- Contact
- Seam 8 Upper
- Seam 8 Middle
- Seam 8 Lower
- Seam 8 Rider
- Seam 9
- Seam 9 Rider
- Seam 10 Upper
- Seam 10 Middle
- Seam 10 M Rider
- Seam 10 Lower
- Mist Mountain Formation
- Morrissey Formation
- Fernie Formation

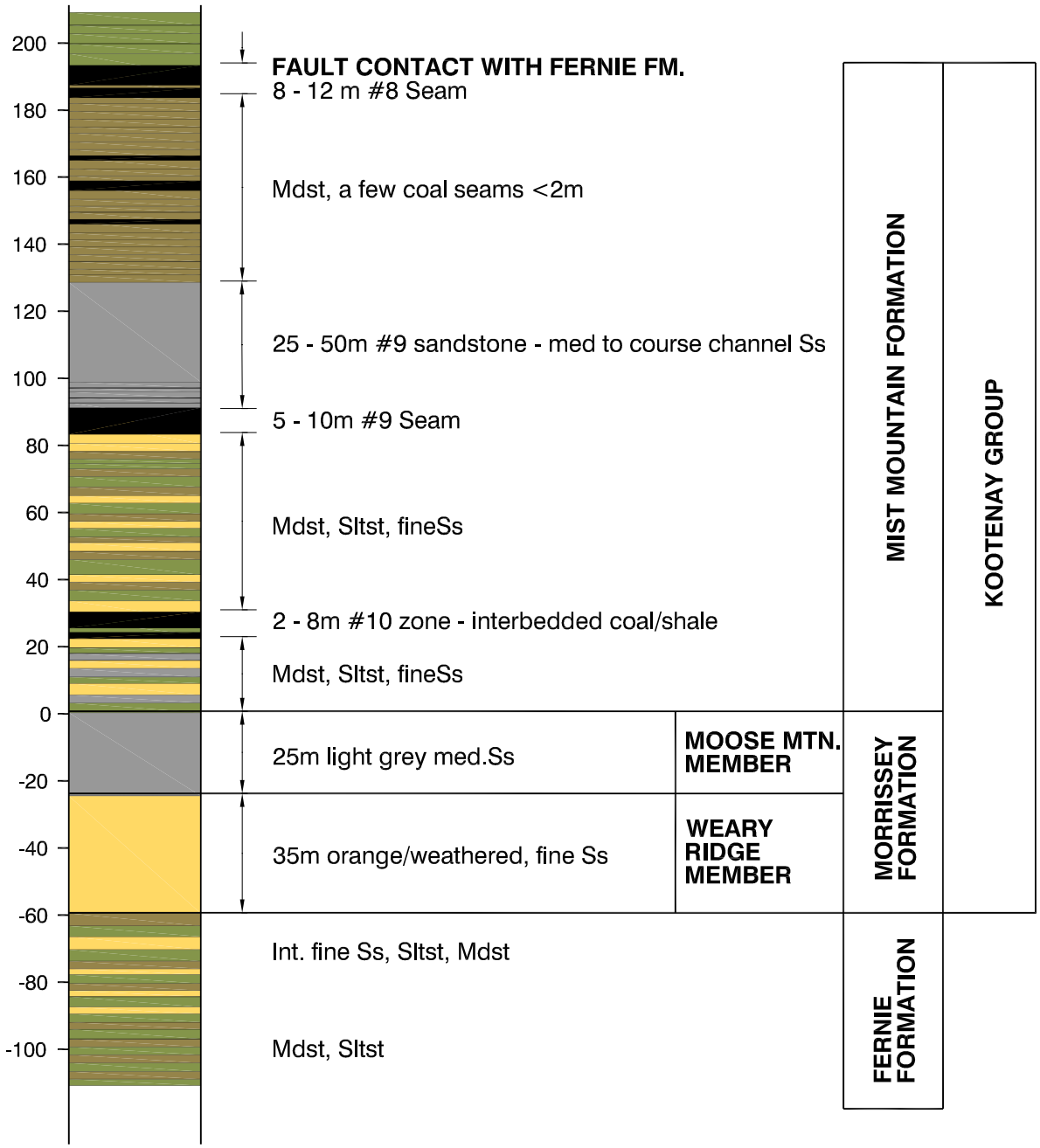
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

CROSS SECTION F-F'

FIGURE 8-10

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 8-10_Cross Section F-F'.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



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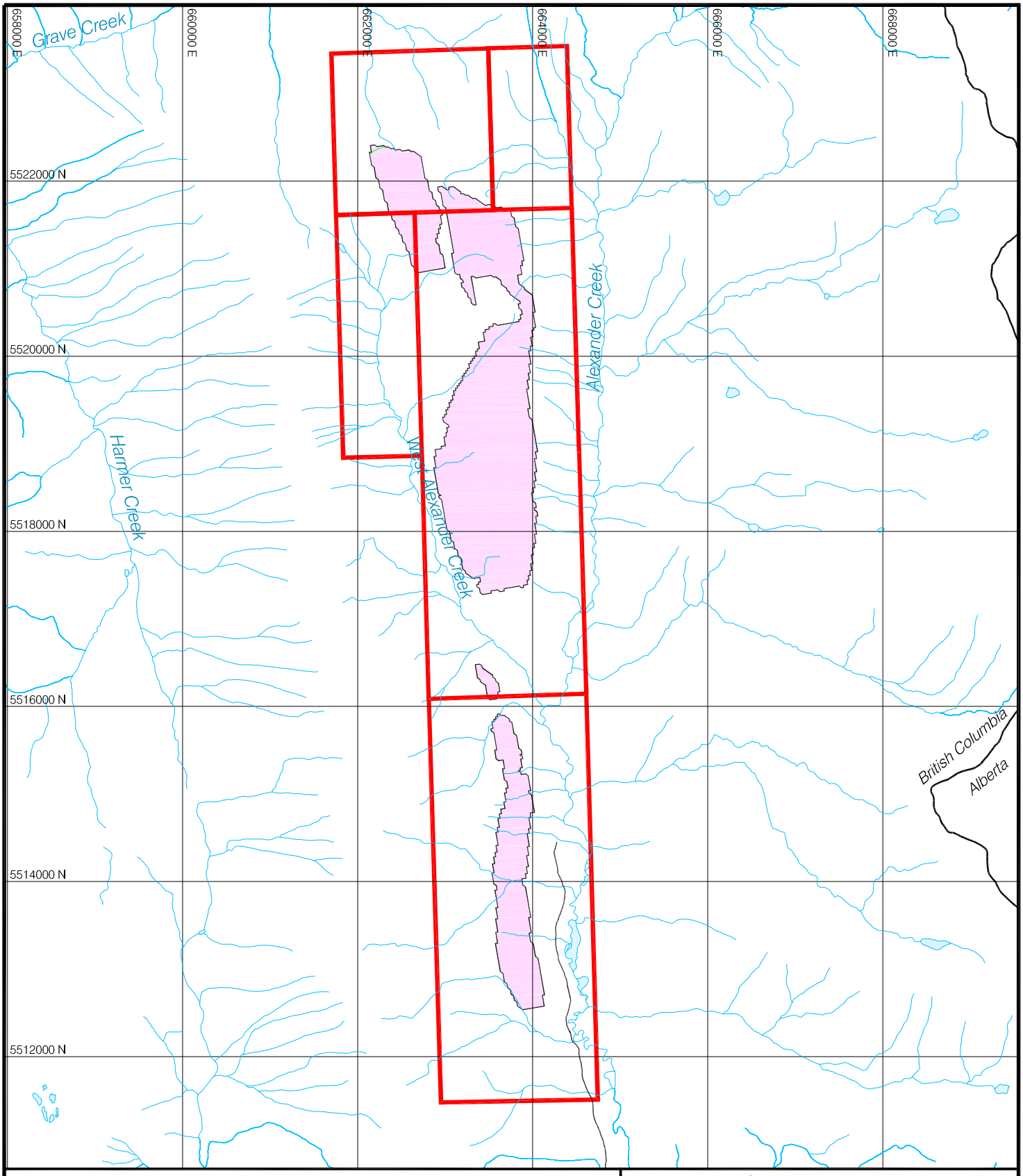
ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

COAL SEAM STRATIGRAPHY

FIGURE 9-1

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 9-1 Coal Seam Statigraphy.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



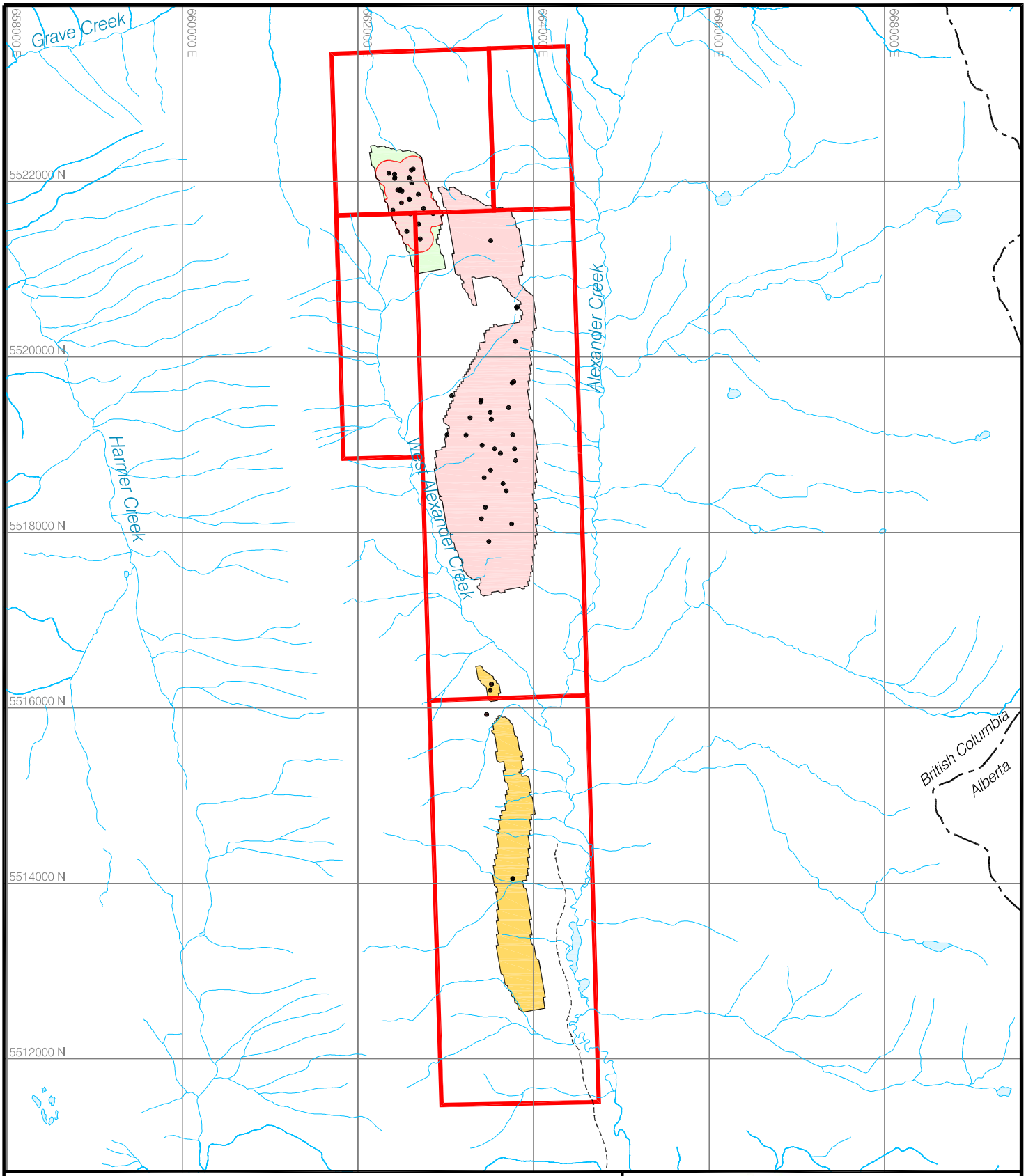
Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

COAL RESOURCE DISTRIBUTION MAP

FIGURE 10-1

DRAWN BY: M.L.E. CHK'D BY: M.E. DATE: 13 03 28	FILE: Fig 10-1 Coal Resource Distribution.dwg G:\ProjectData\Jameson_C_284\284-1_\Reports\ Assessment Report\Figures	NORWEST APEGGA Permit P05015



JAMESON COAL LICENSE
MEASURED RESOURCE
INDICATED RESOURCE
INFERRED RESOURCE
DRILL HOLE

N

1000 500 0 1000 2000

Metres

Jameson RESOURCES LIMITED

ASSESSMENT REPORT
CROWN MOUNTAIN COAL PROPERTY

COAL RESOURCE CLASSIFICATION MAP

FIGURE 10-2

DRAWN BY: M.L.E.
CHK'D BY: M.E.
DATE: 13 03 28

FILE: Fig 10-2 Coal Resource Classification.dwg
G:\ProjectData\Jameson_C_284\284-1_\Reports\Assessment Report\Figures

NORWEST
APEGGA Permit P05015

Appendix 1 – Silenus Resource Management Inc. Work Report

Ministry of Energy, Mines and Petroleum Resources
Mining and Minerals Division

Mineral & Coal
Annual Summary of Work for Exploration Activities
Pursuant to Part 9.2.1(3) of the H.S.R. Code

Date: January 17, 2013 **Mine No.:** 1630209

Permit Number: CX-5-14

Name of Property/Project: Crown Mountain Exploration

Annual Work Approval Number: 12-1630209-0430/ 12-1630209-0918/ 12-1630209- 0816/ 12-1630209-1101

Permittee

Name: NWP Coal Canada Ltd

Address: Suite 800, 1199 West Hastings

City: Vancouver Province: BC

Postal Code: V6E 3T5 Bus. Phone: 435.650.1122 Fax: 604.719.1718

Duration of Exploration Program for reported year.

Start date (Year/Month/Day) 2012/06/20 Finish date (Year/Month/Day) 2012/11/21

Attach a map at a scale of 1:10,000 or better showing as built: trails, roads, drill sites, trenches, test pits, core storage, other developments and reclaimed sites.

Surface Exploration Work Completed on Property

Exploration Surveys

Type	Total Length (km)
Line Cutting	N/A
IP	
EM	
Other	

Type	Total Length (km)
VLF	N/A
Max-Min	
Mag	

Geochem.

Type	# Samples
Grid Soil	N/A
Contour Soil	

Type	# Samples
Detailed Silt	N/A
Other	

Mechanized Work

	# Sites	Total Length (m)	Width (m) (includes sidecast)	Disturbance (ha)
Trenching	2	397	15	0.6
Test Pits				
Access				
Excavated Trail		2,372	16	3.8
Excavated Road				

	Core Size	# Sites	# Holes	Metres (m)	Total Disturbance (ha)
Diamond Drilling					
Percussion Drilling		42	41	5,707	3.4
Other Drilling					
Bulk Sample	Tonnes				

Core Location (NAD 83)

Lat/Long	°	°	**ZONE**
UTM			

Underground Exploration Work Completed on Property This Year

	# Holes	Total Metres Drilled
Diamond Drilling	N/A	
Percussion Drilling		

Bulk Sample	m^3	Tonnes
Ore Mined	N/A	
Waste Mined		
Totals		

New Development	(m)
Drifts	N/A
Raises	
Declines & Ramps	
Rehab Workings	**(m)**
Drifts	N/A
Raises	
Declines & Ramps	

Are underground openings closed in compliance with Section 10.6.5 of the Code? ☐ **Yes** ☐ **No**

Surface Disturbances and Reclamation Completed on Property This Year

	Surface Disturbance (ha) 1ha = 10,000m^2		Reclamation Completed (ha) 1ha = 10,000m^2
Cut grids, camps, helicopter pads			0.8*
Mechanical trenches/test pit	0.6		0.4
Surface drill sites/settling ponds/sumps	3.4		0.7
Excavated Trail construction/modification	3.8		0.2
Excavated Road construction/modification			4.2*
Bulk sample overburden/waste dumps			
Portal sites, ore/waste dumps			
Other: _____			
Totals	7.8		6.3

Reclamation Summary *per the request by MNRO NWP Coal reclaimed some disturbance created by previous exploration programs.

Area of new surface disturbance this year:	7.8 ha
Add disturbance from previous years:	+ 0.0 ha
Subtract disturbance reclaimed this year:	- 6.3 ha
Balance of unreclaimed surface disturbance:	= 1.5 ha

CONFIDENTIAL (Information **not** for routine release)
Deposit Type: _____ **Exploration Expenditure:** _____

Estimated total person/days worked 1,200
Do you expect to be working on this property within one year? ☒ Yes ☐ No
Do you wish to close this permit and have the reclamation security returned? ☐ Yes ☒ No
If yes, submit Notice of Mine Closure (Part 10.6 of the Code)

Manager Signature **Date**

The *Mines Act* of British Columbia authorizes the collection of the requested information on this form. The completed from is routinely available to the public, **except as noted**, and is covered by the *Freedom of Information and Protection of Privacy Act.*

Crown Mountain Exploration
2012 Work Completed

Drill Pad-Permitted/Not Constructed

Label	Elevation	Easting	Northing
12-37	1737	663604.521	5515548.640
12-39	1702	663358.522	5515774.642
12-35	1773	663673.391	5515638.833

Drill Pad Construction

Label	Elevation	Easting	Northing
11-02	2103	662609.522	5522129.636
11-03	1981	662469.523	5521919.637
11-04	2221	662619.520	5521979.634
11-06	2166	662571.124	5521886.962
11-07	2208	662684.523	5521854.636
11-08	2063	662401.137	5521675.921
11-11	2102	662673.522	5521517.640
11-12	2158	662847.926	5521637.462
11-14	2030	663524.521	5519294.637
11-15	2027	663770.684	5519122.459
11-16a/b	1967	663480.771	5519044.231
11-16c	1958	663580.649	5518912.716
11-17	1981	663501.524	5518699.634
11-18	1981	663694.520	5518484.636
11-19	1917	663409.520	5518164.637
11-20	1867	663485.769	5517904.073
11-21	2002	663802.051	5518842.080
11-22a/b	2127	663753.529	5519711.406
12-01a/b	2165	662431.523	5522044.641
12-04	2119	662589.522	5521632.637
12-05	2113	662555.523	5521637.636
12-06	2438	662519.523	5521768.640
12-09	2090	662343.789	5522095.363
12-10	2149	662412.631	5522091.766
12-14	1920	662752.522	5521467.639
12-16	1890	662717.522	5521344.640
12-17	1981	663483.520	5521342.633
12-18	2198	663812.523	5520559.638
12-19	2186	663790.071	5520184.172
12-21	1897	663087.521	5519572.633
12-22	1919	663071.523	5519401.636
12-24	1900	663003.525	5519113.634
12-25	1956	663245.519	5519089.633
12-28	1971	663738.523	5518108.634
12-29	2012	663397.521	5518994.639
12-31	1951	662559.521	5521429.639
12-32	2049	662569.524	5521379.635
12-33	1738	663480.975	5516227.066
12-34	1639	663799.519	5514059.639
12-36	1684	663438.521	5515914.635
12-38	1697	663439.521	5516122.633

Legend

- Drill Pad-Permitted / Not Constructed
- Drill Pad Constructed
- Access Management Area Sign Posted
- Water Sump
- Road Kilometer Signs
- Emergency Heli Pad
- Bridge

Reclaimed

- Fully Reclaimed (2,486m)
- Partially Reclaimed (1077m)

Disturbance Type

- Existing Road Upgraded/ Reconstructed (17,127m)
- New Road Construction (2,372m)
- Permitted New Road-Not Constructed (878m)
- Trench (397m)
- Trails
- Paved Roads
- Unpaved Roads
- Crown Mountain Coal Licenses
- First Nations
- Private
- National and Provincial Parks

Projection: Nad 83 Zone 11 UTM
1:10,000
500 250 0 500 Meters

2012NOW_WorkCompleted\mxd\2012CrownMountainExploration10_WorkCompleted.mcd Jan.16\2013

Appendix 2 – Descriptive Logs

Hole ID: CM11-02							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	19.0	19.5			0.5	Coal	25% Splitter
2	19.5	20.0			0.5	Coal	75%Splitter
3	20.0	20.5			0.5	Coal	50% Splitter
4	20.5	21.0			0.5	Coal and Rock	
5	21.0	21.5			0.5	Rock	25% Splitter
6	21.5	22.0			0.5	Rock	25% Splitter
7	22.0	22.5			0.5	Rock	25% Splitter
8	24.0	24.5			0.5	Coal @ 24.50m	25% Splitter
9	24.5	25.0			0.5	Coal and Rock	25% Splitter
10	25.5	26.0			0.5	Rock	25% Splitter
11	51.0	51.5			0.5	Coal and Carbonaceous mudstone	
12	52.0	52.5			0.5	Coal	Wet
13	53.5	54.0			0.5	Coal	
14	54.0	54.5			0.5	Coal	
15	54.5	55.0			0.5	Coal	50% Splitter
16	55.0	55.5			0.5	Coal	25% Splitter
17	55.5	56.0			0.5	Coal	75% Splitter
18	56.0	56.5			0.5	Coal	75% Splitter
19	56.5	57.0			0.5	Coal	75% Splitter
20	57.0	58.0			1.0	Coal	75% Splitter
21	58.0	58.5			0.5	Coal	100% Splitter
22	58.5	59.0			0.5	Coal	100% Splitter
23	59.0	59.5			0.5	Coal and Shale	100% Splitter
24	59.5	60.0			0.5	Rock, Carbonaceous Shale	
25	60.0	60.5			0.5	Rock, Carbonaceous Shale	
26	60.5	61.0			0.5	Carbonaceous Shale	
27	75.5	76.0			0.5	Coal	100% Splitter
28	76.0	76.5			0.5	Coal	100% Splitter
29	76.5	77.0			0.5	Coal	100% Splitter
30	77.0	77.5			0.5	Coal	100% Splitter
31	77.5	78.0			0.5	Coal	
32	78.0	78.5			0.5	Shale, Dark grey	
33	78.5	79.0			0.5	Shale, Dark grey	

Hole ID: CM11-02							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
34	80.0	81.0			1.0	Coal	Over-drilled 1.0m
35	81.0	81.5			0.5	Coal	
36	81.5	82.0			0.5	Coal and Shale	
37	82.0	82.5			0.5	Coal	
38	82.5	83.0			0.5	Coal and Shale	
39	83.0	83.5			0.5	Shale	
40	83.5	84.0			0.5	Shale	
41	84.0	84.5			0.5	Shale	
42	91.5	92.0			0.5	Coal	100% Splitter
43	92.0	92.5			0.5	Coal	100% Splitter
44	92.5	93.0			0.5	Coal	100% Splitter
45	93.0	93.5			0.5	Coal	100% Splitter
46	93.5	94.0			0.5	Coal	100% Splitter
47	94.0	94.5			0.5	Coal and Shale	
48	95.0	95.5			0.5	Coal and Shale	
49	95.5	96.0			0.5	Coal and Shale	
50	96.0	96.5			0.5	Shale	
51	96.5	97.0			0.5	Shale and Siltstone	
52	118.5	119.0			0.5	Coal	100% Splitter
53	119.0	119.5			0.5	Coal and Shale	
54	119.5	120.0			0.5	Shale	
55	122.0	122.5			0.5	Coal and Shale	
56	122.5	123.0			0.5	Coal and Shale	
57	123.0	123.5			0.5	Coal and Shale	
58	123.5	124.0			0.5	Coal and Shale	
59	124.0	124.5			0.5	Coal	
60	124.5	125.5			1.0	Coal	
61	125.5	126.0			0.5	Coal	
62	126.0	126.5			0.5	Coal	
63	126.5	127.0			0.5	Coal	
64	127.0	127.5			0.5	Coal	
65	127.5	128.0			0.5	Coal	

Hole ID: CM11-02							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
66	128.0	128.5			0.5	Coal	
67	128.5	129.0			0.5	Coal	
68	129.0	129.5			0.5	Coal	
69	129.5	130.0			0.5	Coal	
70	130.0	130.5			0.5	Coal	
71	130.5	131.0			0.5	Coal and Shale	
72	131.0	131.5			0.5	Coal and Shale	
73	131.5	132.0			0.5	Shale and Coal	
74	132.0	132.5			0.5	Shale	
75	132.5	133.0			0.5	Shale	
76	133.0	133.5			0.5	Shale	
77	135.5	136.0			0.5	Coal and Shale	
78	136.0	136.5			0.5	Shale w/ 15% Sandstone	
79	136.5	137.0			0.5	Shale w/ 30% Sandstone	
80	147.0	147.5			0.5	Coal and Shale	
81	147.5	148.0			0.5	Coal	
82	148.0	148.5			0.5	Coal	
83	148.5	149.0			0.5	Coal and Shale	
84	149.0	149.5			0.5	Shale, minor coal, some SS	
85	149.5	150.0			0.5	Sandstone w/Shale	
86	155.5	156.0			0.5	Coal and Shale	
87	156.0	156.5			0.5	Shale and Coal	
88	156.5	157.0			0.5	Shale and Sandstone	
89	157.0	157.5			0.5	Shale	
90	164.0	164.5			0.5	Coal and Shale	
91	164.5	165.0			0.5	Coal	
92	165.0	165.5			0.5	Coal	
93	165.5	166.0			0.5	Coal	
94	166.0	166.5			0.5	Coal	
95	166.5	167.0			0.5	Coal	
96	167.0	167.5			0.5	Sandstone and Coal	
97	167.5	168.0			0.5	Sandstone	
98	168.0	168.5			0.5	Sandstone	

Hole ID: CM11-02B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	16.0	16.5			0.5	Coal and shale	
2	16.5	17.0			0.5	Coal	
3	17.0	17.5			0.5	Coal	
4	17.5	18.0			0.5	Coal	
5	18.0	18.5			0.5	Coal	
6	18.5	19.0			0.5	Coal	
7	19.0	19.5			0.5	Coal and shale	
8	19.5	20.0			0.5	Shale	
9	20.0	20.5			0.5	Shale	
10	20.5	21.0			0.5	Shale and coal	Coal comes last
11	21.0	21.5			0.5	Coal and shale	50%coal, 50%shale
12	21.5	22.0			0.5	Coal	
13	22.0	22.5			0.5	Coal	
14	22.5	23.0			0.5	Shale w/ minor coal	
15	23.0	23.5			0.5	Shale	
16	23.5	24.0			0.5	Shale	
17	32.5	33.0			0.5	Coal	
18	33.0	33.5			0.5	Coal	
19	33.5	34.0			0.5	Coal	
20	34.0	34.5			0.5	Coal	
21	34.5	35.0			0.5	Shale	
22	35.0	35.5			0.5	Shale and coal	
23	35.5	36.0			0.5	Coal w/ minor shale	
24	36.0	36.5			0.5	Shale	
25	36.5	37.0			0.5	Shale	
26	57.0	57.5			0.5	Coal	
27	57.5	58.0			0.5	Coal	
28	58.0	58.5			0.5	Shale	
29	58.5	59.0			0.5	Shale	
					0.0		
30	68.0	68.5			0.5	Coal w/ minor shale	Coal comes last
31	68.5	69.0			0.5	Coal	
32	69.0	69.5			0.5	Coal	
33	69.5	70.0			0.5	Coal and shale	Shale comes last
34	70.0	70.5			0.5	Shale w/ minor coal	

Hole ID: CM11-02B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
35	70.5	71.0			0.5	Shale	
36	71.0	71.5			0.5	Shale w/ minor coal	
37	71.5	72.0			0.5	Coal	
38	72.0	72.5			0.5	Coal w/ minor shale	
39	72.5	73.0			0.5	Shale w/ minor coal	
40	73.0	73.5			0.5	Shale	
41	85.5	86.0			0.5	Shale and coal	
42	86.0	86.5			0.5	Shale and coal	
43	86.5	87.0			0.5	Shale and coal	
44	87.0	87.5			0.5	Shale and coal	
45	89.0	89.5			0.5	Shale, siltstone, coal	
46	89.5	90.0			0.5		
47	90.0	90.5			0.5	Coal w/ minor shale, siltstone	
48	90.5	91.0			0.5	Coal	
49	91.0	91.5			0.5	Coal	
50	91.5	92.0			0.5	Coal	
51	92.0	92.5			0.5	Coal	
52	92.5	93.0			0.5	Coal	
53	93.0	93.5			0.5	Coal	
54	93.5	94.0			0.5	Coal	
55	94.0	94.5			0.5		
56*	94.5	95.0	94.5	95.5	1.0	Coal	#56 might = 1m, large volume
57	95.0	95.5	95.5	96.0	0.5	Coal	Depths 0.5m out
58	96.0	96.5			0.5	Coal	
59	96.5	97.0			0.5	Coal	
60	97.0	97.5			0.5	Coal	
61	97.5	98.0			0.5	Coal	
62	98.0	98.5			0.5	Coal	
63	98.5	99.0			0.5	Coal	
64	99.0	99.5			0.5	Coal	
65	99.5	100.0			0.5	Coal	
66	100.0	100.5			0.5	Coal	
67	100.5	101.0			0.5	Coal	
68	101.0	101.5			0.5	Coal	

Hole ID: CM11-02B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
69	101.5	102.0			0.5	Coal	
70	102.0	102.5			0.5	Coal	
71	102.5	103.0			0.5	Coal	
72	103.0	103.5			0.5	Coal and shale	70%Shale, 30%Coal
73	103.5	104.0			0.5	Shale	
74	104.0	104.5			0.5	Shale	
75	109.5	110.0			0.5	Coal	
76	110.0	110.5			0.5	Coal	
77	110.5	111.0			0.5	Shale and coal	80%Shale, shale comes last
78	111.0	111.5			0.5	Shale	
79*	118.5	119.0	115.5	116.0	0.5	Coal	*Depths adjusted to 3m shallower based on logs (depth mistake while drilling)
80	119.0	119.5	116.0	116.5	0.5	Coal	
81	119.5	120.0	116.5	117.0	0.5	Coal	
82	120.0	120.5	117.0	117.5	0.5	Coal	
83	120.5	121.0	117.5	118.0	0.5	Shale w/ minor coal	
84	121.0	121.5	118.0	118.5	0.5	Shale	

Hole ID: CM11-03A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	33.0	33.5			0.5	Coal - very fine	
2	33.5	34.0			0.5	Coal - very fine	
3	34.0	34.5			0.5	Coal - very fine	
4	34.5	35.0			0.5	Coal - very fine	
5	35.0	35.5			0.5	Coal - very fine	
6*	35.5	36.5			1.0	Coal - very fine	1m sample
7	36.5	37.0			0.5	Coal - very fine	
8	37.0	37.5			0.5	Coal - very fine	
9	37.5	38.0			0.5	Coal - very fine	
10	38.0	38.5			0.5	Coal - very fine	
11	38.5	39.0			0.5	Coal - very fine	
12	39.0	39.5			0.5	Coal - very fine	
13	39.5	40.0			0.5	Coal - very fine	
14	40.0	40.5			0.5	Coal - very fine	
15	40.5	41.0			0.5	Coal - fine to coarse w/ minor mudstone	
16	41.0	41.5			0.5	Coal - med. to coarse w/ mudstone	
17	41.5	42.0			0.5	Carbonaceous Mudstone - coarse	
18	42.0	42.5			0.5	Mudstone w/ coal	
19	42.5	43.0			0.5	Mudstone	
20	43.0	43.5			0.5	Coal and Mudstone	
21	43.5	44.0			0.5	Mudstone ~60% and Coal ~40%	
22	44.0	44.5			0.5	Coal - fine to med.	
23	44.5	45.0			0.5	Coal - fine	
24	45.0	45.5			0.5	Coal - fine	
25	45.5	46.0			0.5	Coal - med. to coarse w/ mudstone	
26	46.0	46.5			0.5	Mudstone w/ minor coal	
27	46.5	47.0			0.5	Mudstone	
28	47.0	47.5			0.5	Coal - very fine	
29	47.5	48.0			0.5	Coal and Mudstone	
30	48.0	48.5			0.5	Mudstone w/ minor coal	
31	48.5	49.0			0.5	Mudstone	
32	49.0	49.5			0.5	Mudstone	
33	53.5	54.0			0.5	Coal	
34	54.0	54.5			0.5	Coal	
35	54.5	55.0			0.5	Coal	
36	55.0	55.5			0.5	Coal	

Hole ID: CM11-03A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
37	55.5	56.0			0.5	Coal	
38	56.0	56.5			0.5	Mudstone and Coal	
39	56.5	57.0			0.5	Coal - fine	
40	57.0	57.5			0.5	Coal and Mudstone	
41	57.5	58.0			0.5	Coal - med. grained / mudstone	
42	58.0	58.5			0.5	Mudstone w/ minor coal	
43	58.5	59.0			0.5	Mudstone w/ minor coal	
44	59.0	59.5			0.5	Mudstone	
45	119.0	119.5			0.5	Coal	back circulation from inside rods
46	119.5	120.0			0.5	Coal	
47	120.0	120.5			0.5	Coal	
48	120.5	121.0			0.5	Coal w/ minor shale	
49	121.0	121.5			0.5	Coal w/ minor shale	
50	121.5	122.0			0.5	Coal w/ minor shale	
51	122.0	122.5			0.5	Coal w/ minor shale	
52	122.5	123.0			0.5	Shale	
53	123.0	123.5			0.5	Shale	
54	129.5	130.0			0.5	Coal	
55	130.0	130.5			0.5	Coal	
56	130.5	131.0			0.5	Coal	
57	131.0	131.5			0.5	Shale w/ minor coal	
58	131.5	132.0			0.5	Shale	
59	132.0	132.5			0.5	Shale	
60	132.5	133.0			0.5	Shale and coal	Coal stringer?
61	133.0	133.5			0.5	Coal w/ minor shale	
62	133.5	134.0			0.5	Shale and Sandstone	
63	150.5	151.0			0.5	Coal	
64	151.0	151.5			0.5	Coal and Shale	
65	151.5	152.0			0.5	Shale	
66	152.0	152.5			0.5	Shale	
67	153.5	154.0			0.5	Coal	thin bed
68	154.0	154.5			0.5	Sandstone and coal	
69	154.5	155.0			0.5	Coal and Shale	thin bed

Hole ID: CM11-03A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
70	155.0	155.5			0.5	Shale	
71	155.5	156.0			0.5	Coal and Shale	
72	156.0	156.5			0.5	Sandstone and coal	
73	156.5	157.0			0.5	Coal	
74	157.0	157.5			0.5	Coal	
75	157.5	158.0			0.5	Sandstone and coal	Sandstone comes first
76	158.0	158.5			0.5	Coal	
77	158.5	159.0			0.5	Coal and Shale	Shale comes first
78	159.0	159.5			0.5	Coal and Shale	Shale comes first
79	159.5	160.0			0.5	Coal mixed w/ minor shale	Contaminated
80	160.0	160.5			0.5	Coal	
81	160.5	161.0			0.5	Coal mixed w/ minor shale	Contaminated?
82	161.0	161.5			0.5	Coal mixed w/ minor shale	Contaminated?
83	161.5	162.0			0.5	Coal mixed w/ minor shale	Contaminated?
84	162.0	162.5			0.5	Shale and coal	Coal comes last
85	162.5	163.0			0.5	Shale	
86	163.0	163.5			0.5	Shale	
87	166.5	167.0			0.5	Coal mixed w/ shale	Shale comes first
88	167.0	167.5			0.5	Coal mixed w/ shale	Contaminated
89	167.5	168.0			0.5	Coal and Shale	Shale comes last
90	168.0	168.5			0.5	Shale	
91	168.5	169.0			0.5	Shale	
92	177.0	177.5			0.5	Coal	
93	177.5	178.0			0.5	Coal	
94	178.0	178.5			0.5	Coal w/ minor sandstone	
95	178.5	179.0			0.5	Dark grey Sandstone	
96	179.0	179.5			0.5	Coal and dark grey sandstone	
97	179.5	180.0			0.5	Dark grey Sandstone	
98	180.0	180.5			0.5	Dark grey Sandstone	

Hole ID: CM11-03B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	30.5	31.0			0.5	Carbonaceous Mudstone w/ minor coal	Likely just a coal stringer
2	35.5	36.0			0.5	Coal - very fine	very small sample
3	36.0	36.5			0.5	Coal w/shale	
4	36.5	37.0			0.5	Coal - very fine	
5	37.0	37.5			0.5	Coal - very fine	
6	37.5	38.0			0.5	Coal - very fine to pebble sized chips	
7	38.0	38.5			0.5	Coal - very fine	
8	38.5	39.0			0.5	Coal - very fine	
9	39.0	39.5			0.5	Coal - very fine	
10	39.5	40.0			0.5	Coal - very fine	
11	40.0	40.5			0.5	Coal - very fine	Small sample
12	40.5	41.0			0.5	Coal - very fine	
13	41.0	41.5			0.5	Coal - very fine	
14	41.5	42.0			0.5	Coal - very fine	
15	42.0	42.5			0.5	Coal - very fine	
16	42.5	43.0			0.5	Coal - very fine	
17	43.0	43.5			0.5	Coal - very fine	
18	43.5	44.0			0.5	Coal - very fine to med.	
19	44.0	44.5			0.5	Coal	Sample 19and20 originally sampled
20	44.5	45.0			0.5	Coal	together, sample split into 2
21	45.0	45.5			0.5	Coal	
22	45.5	46.0			0.5	Coal	
23	46.0	46.5			0.5	Coal	
24	46.5	47.0			0.5	Coal	
25	47.0	47.5			0.5	Coal - very fine to med.	
26	47.5	48.0			0.5	Coal - very fine to med.	
27	48.0	48.5			0.5	Coal - med.	
28	48.5	49.0			0.5	Coal - med. to slightly coarse	
29	49.0	49.5			0.5	Coal w/ minor silt/rock fragments	
30	49.5	50.0			0.5	Rock (siltandshale) w/ minor coal	
31	50.0	50.5			0.5	Rock (siltandshale)	
32	50.5	51.0			0.5	Carbonaceous Mudstone	
33	51.0	51.5			0.5	Carbonaceous Mudstone w/ minor coal	
34	64.5	65.0			0.5	Carbonaceous Mudstone and coal	
35	65.0	65.5			0.5	Coal	

Hole ID: CM11-03B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
36	65.5	66.0			0.5	Coal	
37	66.0	66.5			0.5	Coal	
38	66.5	67.0			0.5	Coal	
39	67.0	67.5			0.5	Coal	
40	67.5	68.0			0.5	Coal	
41	68.0	68.5			0.5	Coal	
42	68.5	69.0			0.5	Coal	
43	69.0	69.5			0.5	Coal (v. fine) and Carbonaceous Mudstone	
44	69.5	70.0			0.5	Coal w/ minor Carbonaceous Mudstone	
45	70.0	70.5			0.5	Carbonaceous Mudstone w/ coal	
46	70.5	71.0			0.5	Carbonaceous Mudstone w/ minor coal	
47	71.0	71.5			0.5	Carbonaceous Mudstone	
48	72.5	73.0			0.5	Coal (v.fine) and Siltstone (pebble - cobble)	Coal appeared after adding pipe, possible lifted pipe back into coal seam; coal likely not actually w/in this interval.
49	77.0	77.5	74*	74.5	0.5	Coal - very fine	very large sample
50	77.5	78.0	74.5	75.0	0.5	Coal - med. to coarse (minor fine)	* Depths adjusted from logs, pipe count off by 1 pipe?
51	78.0	78.5	75.0	75.5	0.5	Coal	
52	78.5	79.0	75.5	76.0	0.5	Coal - med. to coarse	
53	79.0	79.5	76.0	76.5	0.5	Coal w/ minor mudstone	
54	79.5	80.0	76.5	77.0	0.5	Mudstone w/ minor coal	
55	80.0	80.5	77.0	77.5	0.5	Mudstone	
56	80.5	81.0	77.5	78.0	0.5	Mudstone	
57	81.0	81.5	78.0	78.5	0.5	Mudstone - v. coarse chips, coal in fines	

Hole ID: CM11-04							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	104.5	105.0	103.5	104.0	0.5	Coal	
2	105.0	105.5	104.0	104.5	0.5	Coal	
3	105.5	106.0	104.5	105.0	0.5	Coal	
4	106.0	106.5	105.0	105.5	0.5	Coal	
5	106.5	107.0	105.5	106.0	0.5	Coal	
6	107.0	107.5	106.0	106.5	0.5	Coal	
7	107.5	108.0	106.5	107.0	0.5	Coal and Shale	
8	108.0	108.5	107.0	107.5	0.5	Coal	
9	108.5	109.0	107.5	108.0	0.5	Coal	
10	109.0	109.5	108.0	108.5	0.5	Coal	
11	109.5	110.0	108.5	109.0	0.5	Coal	
12	110.0	110.5	109.0	109.5	0.5	Coal	
13	110.5	111.0	109.5	110.0	0.5	Coal	
14	111.0	111.5	110.0	110.5	0.5	Coal and Shale	
15	111.5	112.0	110.5	111.0	0.5	Coal and Shale	
16	112.0	112.5	111.0	111.5	0.5	Shale and Coal	
17	112.5	113.0	111.5	112.0	0.5	Shale and Coal	
18	113.0	113.5	112.0	112.5	0.5	Shale	
19	113.5	114.0	112.5	113.0	0.5	Shale	
20	121.0	121.2	120.0	120.2	0.2	Coal	
21	121.2	122.0	120.2	121.0	0.8	Coal	
22	122.0	122.5	121.0	121.5	0.5	Coal	
23	122.5	123.0	121.5	122.0	0.5	Coal and Shale	
24	123.0	123.5	122.0	122.5	0.5	Shale	
25	123.5	124.0	122.5	123.0	0.5	Shale	
26	124.0	124.5	123.0	123.5	0.5	Shale	
27	124.5	125.0	123.5	124.0	0.5	Shale	
28	127.5	128.0	126.5	127.0	0.5	Coal	
29	128.0	128.5	127.0	127.5	0.5	Coal and Shale	
30	128.5	129.0	127.5	128.0	0.5	Sandstone	
31	129.0	129.5	128.0	128.5	0.5	Sandstone	
32	143.5	144.0	142.5	143.0	0.5	Coal	
33	144.0	144.5	143.0	143.5	0.5	Coal	
34	144.5	145.0	143.5	144.0	0.5	Coal and Shale	

Hole ID: CM11-04							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
35	145.0	145.5	144.0	144.5	0.5	Shale and minor Coal	
36	145.5	146.0	144.5	145.0	0.5	Shale and minor Coal	
37	147.0	147.5	146.0	146.5	0.5	Coal	
38	147.5	148.0	146.5	147.0	0.5	Coal	
39	148.0	148.5	147.0	147.5	0.5	Coal and Shale	
40	148.5	149.0	147.5	148.0	0.5	Shale and minor Coal	
41	149.0	149.5	148.0	148.5	0.5	Coal	
42	149.5	150.0	148.5	149.0	0.5	Coal	
43	150.0	150.5	149.0	149.5	0.5	Coal	
44	150.5	151.0	149.5	150.0	0.5	Coal	
45	151.0	151.5	150.0	150.5	0.5	Coal	
46	151.5	152.0	150.5	151.0	0.5	Coal	
47	152.0	152.5	151.0	151.5	0.5	Coal	
48	152.5	153.0	151.5	152.0	0.5	Coal	
49	153.0	153.5	152.0	152.5	0.5	Coal	
50	153.5	154.0	152.5	153.0	0.5	Coal	
51	154.0	154.5	153.0	153.5	0.5	Coal	
52	154.5	155.0	153.5	154.0	0.5	Coal	
53	155.0	155.5	154.0	154.5	0.5	Coal	
54	155.5	156.0	154.5	155.0	0.5	Coal and Shale	
55	156.0	156.5	155.0	155.5	0.5	Coal	
56	156.5	157.0	155.5	156.0	0.5	Shale and minor Coal	
57	157.0	157.5	156.0	156.5	0.5	Shale	
58	157.5	158.0	156.5	157.0	0.5	Shale	
59	158.0	158.5	157.0	157.5	0.5	Shale and minor Coal	
60	160.5	161.0	159.5	160.0	0.5	Coal mixed w/Shale	
61	161.0	161.5	160.0	160.5	0.5	Coal	
62	161.5	162.0	160.5	161.0	0.5	Coal	
63	162.0	162.5	161.0	161.5	0.5	Shale	
64	162.5	163.0	161.5	162.0	0.5	Shale and Sandstone	
65	163.0	163.5	162.0	162.5	0.5	Shale	
66	174.0	174.5	173.0	173.5	0.5	Coal and Shale	
67	174.5	175.0	173.5	174.0	0.5	Coal	
68	175.0	175.5	174.0	174.5	0.5	Coal	

Hole ID: CM11-04							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
69	175.5	176.0	174.5	175.0	0.5	Coal	
70	176.0	176.5	175.0	175.5	0.5	Shale and minor Coal	
71	176.5	177.0	175.5	176.0	0.5	Shale	
72	177.0	177.5	176.0	176.5	0.5	Shale	

Hole ID: CM11-07							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	67.5	68.0			0.5	Coal and shale	
2	68.0	68.5			0.5	Coal	
3	68.5	69.0			0.5	Coal	
4	69.0	69.5			0.5	Coal	
5	69.5	70.0			0.5	Coal	
6	70.0	70.5			0.5	Coal	
7	70.5	71.0			0.5	Coal	
8	71.0	71.5			0.5	Coal	
9	71.5	72.0			0.5	Shale w/ minor coal	
10	72.0	72.5			0.5	Shale	
11	72.5	73.0			0.5	Coal	
12	73.0	73.5			0.5	Coal	
13	73.5	74.0			0.5	Coal	
14	74.0	74.5			0.5	Coal	
15	74.5	75.0			0.5	Coal	
16	75.0	75.5			0.5	Coal and shale	
17	75.5	76.0			0.5	Shale	
18	76.0	76.5			0.5	Shale	
19	92.5	93.0			0.5	Coal and shale	
20	93.0	93.5			0.5	Coal and shale	
21	93.5	94.0			0.5	Coal	
22	94.0	94.5			0.5	Coal	
23	94.5	95.0			0.5	Coal and shale	
24	95.0	95.5			0.5	Shale	
25	95.5	96.0			0.5	Shale and coal	coal comes last
26	96.0	96.5			0.5	Coal and shale	
27	96.5	97.0			0.5	Shale	
28	97.0	97.5			0.5	Shale and sandstone	
29	109.0	109.5			0.5	Coal	
30	109.5	110.0			0.5	Coal	
31	110.0	110.5			0.5	Shale	
32	110.5	111.0			0.5	Sandstone	
33	111.5	112.0			0.5	Coal	
34	112.0	112.5			0.5	Coal	

Hole ID: CM11-07							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
35	112.5	113.0			0.5	Coal	
36	113.0	113.5			0.5	Shale and coal	
37	113.5	114.0			0.5	Shale and coal	coal comes last
38	114.0	114.5			0.5	Coal	
39	114.5	115.0			0.5	Coal	
40	115.0	115.5			0.5	Coal	
41	115.5	116.0			0.5	Coal	
42	116.0	116.5			0.5	Coal	
43	116.5	117.0			0.5	Coal	
44	117.0	117.5			0.5	Coal	
45	117.5	118.0			0.5	Coal	
46	118.0	118.5			0.5	Coal	
47	118.5	119.0			0.5	Coal	
48	119.0	119.5			0.5	Coal	
49	119.5	120.0			0.5	Coal	
50	120.0	120.5			0.5	Coal	
51	120.5	121.0			0.5	Coal	
52	121.0	121.5			0.5	Shale and coal	
53	121.5	122.0			0.5	Shale	
54	122.0	122.5			0.5	Coal mixed w/shale	shale comes first
55	122.5	123.0			0.5	Shale	
56	123.0	123.5			0.5	Shale	
57	123.5	124.0			0.5	Shale	
58	126.0	126.5			0.5	Coal	
59	126.5	127.0			0.5	Shale and coal	
60	127.0	127.5			0.5	Coal and shale	
61	127.5	128.0			0.5	Shale and sandstone	
62	137.0	137.5			0.5	Coal	
63	137.5	138.0			0.5	Coal	
64	138.0	138.5			0.5	Coal	
65	138.5	139.0			0.5	Coal	
66	139.0	139.5			0.5	Coal and dark grey sandstone	Coal >>Sandstone
67	139.5	140.0			0.5	Dark grey sandstone and coal	Sandstone>coal
68	140.0	140.5			0.5	Dk grey sandstone and shale w/ minor coal	
69	140.5	141.0			0.5	Dark grey sandstone and shale	

Hole ID: CM11-07							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
70	141.0	141.5			0.5	Dark grey sandstone and shale	
71	155.0	155.5			0.5	Coal	
72	155.5	156.0			0.5	Coal	
73	156.0	156.5			0.5	Sand, med. grey, loose grains	
74	156.5	157.0			0.5	Grey sand, loose grains	

Hole ID: CM11-08							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	8.5	9.0			0.5	Coal	
2	9.0	9.5			0.5	Coal	
3	9.5	10.0			0.5	Shale and coal	
4	10.0	10.5			0.5	Shale and Sandstone	drills like 9 sand
5	28.5	29.0			0.5	Shale to coal	
6	29.0	29.5			0.5	Coal w/ minor shale	
7	29.5	30.0			0.5	Coal	
8	30.0	30.5			0.5	Coal	
9	30.5	31.0			0.5	Coal and shale	Coal at top, shale for rest (80-90%)
10	31.0	31.5			0.5	Shale	
11	31.5	32.0			0.5	Shale	
12	39.5	40.0			0.5	Shaley coal	
13	40.0	40.5			0.5	Shale	
14	50.5	51.0			0.5	Coal	
15	51.0	51.5			0.5	Coal	
16	51.5	52.0			0.5	???	no notes, presumably coal
17	52.0	52.5			0.5	???	no notes, presumably coal
18	52.5	53.0			0.5	Coal and shale	
19	53.0	53.5			0.5	Coal	
20	53.5	54.0			0.5	Coal	
21	54.0	54.5			0.5	Coal and shale	
22	54.5	55.0			0.5	Coal	
23	55.0	55.5			0.5	Coal and shale	
24	55.5	56.0			0.5	Coal	
25	56.0	56.5			0.5	Coal and shale	
26	56.5	57.0			0.5	Coal and shale	
27	57.0	57.5			0.5	Shale	
28	57.5	58.0			0.5	Shale	

Hole ID: CM11-11							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	62.0	62.5			0.5	Coal	
2	62.5	63.0			0.5	Coal	
3	63.0	63.5			0.5	Coal	
4	63.5	64.0			0.5	Coal	
5	64.0	64.5			0.5	Coal	
6	64.5	65.0			0.5	Coal and shale	Shale comes last
7	65.0	65.5			0.5	Shale and coal	Coal comes last
8	65.5	66.0			0.5	Coal	
9	66.0	66.5			0.5	Coal	
10	66.5	67.0			0.5	Coal	
11	67.0	67.5			0.5	Coal w/ minor shale	
12	67.5	68.0			0.5	Coal and shale	Shale comes last
13	68.0	68.5			0.5	Shale	
14	68.5	69.0			0.5	Shale	
	69.0	69.5			0.5	Shale	No sample taken
15	80.5	81.0			0.5	Coal, shaley	
16	81.0	81.5			0.5	Coal	
17	81.5	82.0			0.5	Coal	
18	82.0	82.5			0.5	Shale	
19	82.5	83.0			0.5	Shale	
20	83.0	83.5			0.5	Shale	
21	83.5	84.0			0.5	Shale and coal	Coal comes last
22	84.0	84.5			0.5	Coal	
23	84.5	85.0			0.5	Shale	
24	85.0	85.5			0.5	Shale	
25	92.0	92.5			0.5	Coal	
26	92.5	93.0			0.5	Coal mixed w/shale	20%Shale shale comes last
27	93.0	93.5			0.5	Shale	
28	93.5	94.0			0.5	Shale	
29	94.0	94.5			0.5	Coal	
30	94.5	95.0			0.5	Coal	
31	95.0	95.5			0.5	Coal w/ minor shale	
32	95.5	96.0			0.5	Coal w/ minor shale	
33	96.0	96.5			0.5	Coal	
34	96.5	97.0			0.5	Coal w/ minor shale	

Hole ID: CM11-11							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
35	97.0	97.5			0.5	Coal	
36	97.5	98.0			0.5	Shale w/ minor coal	
37	98.0	98.5			0.5	Coal	
38	98.5	99.0			0.5	Coal	
39	99.0	99.5			0.5	Coal	
40	99.5	100.0			0.5	Coal	
41	100.0	100.5			0.5	Coal	
42	100.5	101.0			0.5	Coal	
43	101.0	101.5			0.5	Coal and shale	50%Shale, shale comes last
44	101.5	102.0			0.5	Shale and sandstone	
45	102.0	102.5			0.5	Shale	
46	102.5	103.0			0.5	Shale w/ minor coal	coal stringer (?)
	103.0	103.5			0.5	Shale and sandstone	No sample taken
47	107.5	108.0			0.5	Coal and shale	
48	108.0	108.5			0.5	Coal and shale	
49	108.5	109.0			0.5	Coaly shale	Mostly shale
50	109.0	109.5			0.5	Shale	
51	117.5	118.0			0.5	Coal	
52	118.0	118.5			0.5	Coal	
53	118.5	119.0			0.5	Coal	
54	119.0	119.5			0.5	Coal and shale	50%Shale, 50%Coal - shale at base
55	119.5	120.0			0.5	Shale	
56	120.0	120.5			0.5	Shale	
	120.5	121.0			0.5	Shale	No sample taken
57	121.5	122.0			0.5	Coal	
58	122.0	122.5			0.5	Coal	
59	122.5	123.0			0.5	Coal	
60	123.0	123.5			0.5	Shale	
61	123.5	124.0			0.5	Shale	
					0.0		
62	129.0	129.5			0.5	Coal	
63	129.5	130.0			0.5	Coal and shale	
64	130.0	130.5			0.5	Shale	

Hole ID: CM11-11							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
65	137.0	137.5			0.5	Shaley coal	
66	137.5	138.0			0.5	Coal	
67	138.0	138.5			0.5	Coal	
68	138.5	139.0			0.5	Coal	
69	139.0	139.5			0.5	Coal and sandstone	

Hole ID: CM11-12							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	11.5	12.0			0.5	Coal	Wet sample
2	12.0	12.5			0.5	Coal	Dry Sample
3	12.5	13.0			0.5	Coal	Dry Sample - from annulus
4	13.0	13.5			0.5	Coal	Dry Sample
5	13.5	14.0			0.5	Rock	Dry Sample
6	14.0	14.5			0.5	Coal and Rock	Dry Sample
7	14.5	15.0			0.5	Coal	Dry Sample - 75% Splitter
8	15.0	15.5			0.5	Coal	Dry Sample - 75% Splitter
9	15.5	16.0			0.5	Coal	Dry Sample - 75% Splitter
10	16.0	16.5			0.5	Coal and Rock	Dry Sample - 75% Splitter
11	16.5	17.0			0.5	Coal and Rock	Dry Sample - 75% Splitter
12	17.0	17.5			0.5	Rock	Dry Sample - 75% Splitter
13	17.5	18.0			0.5	Rock	Dry Sample - 75% Splitter
14	18.0	18.5			0.5	Rock	Dry Sample - 75% Splitter
15	28.5	29.0	34.5	35.0	0.5	Coal	100% Splitter
16	29.0	29.5	35.0	35.5	0.5	Coal and Shale	100% Splitter
17	29.5	30.5	35.5	36.5	1.0	Shale	100% Splitter
18	30.5	31.0	36.5	37.0	0.5	Shale	100% Splitter
19	31.0	31.5	37.0	37.5	0.5	Coal	100% Splitter
20	31.5	32.0	37.5	38.0	0.5	Coal and Shale	100% Splitter
21	32.0	32.5	38.0	38.5	0.5	Shale and minor Coal	100% Splitter
22	32.5	33.0	38.5	39.0	0.5	Shale	100% Splitter
23	39.5	40.0	45.5	46.0	0.5	Coal	
24	40.0	40.5	46.0	46.5	0.5	Coal	
25	40.5	41.0	46.5	47.0	0.5	Coal	
26	41.0	41.5	47.0	47.5	0.5	Coal	
27	41.5	42.0	47.5	48.0	0.5	Coal	
28	42.0	42.5	48.0	48.5	0.5		
29	42.5	43.0	48.5	49.0	0.5	Coal	
30	43.0	43.5	49.0	49.5	0.5	Coal	
31	43.5	44.0	49.5	50.0	0.5	Coal	
32						Coal	
33	44.0	44.5	50.0	50.5	0.5	Coal	
34	44.5	45.0	50.5	51.0	0.5	Coal	
35	45.0	45.5	51.0	51.5	0.5	Coal	

Hole ID: CM11-12							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
36	45.5	46.0	51.5	52.0	0.5	Coal	
37	46.0	46.5	52.0	52.5	0.5	Coal	
38	46.5	47.0	52.5	53.0	0.5	Coal	
39	47.0	47.5	53.0	53.5	0.5	Coal and Shale	
40	47.5	48.0	53.5	54.0	0.5	Shale	
41	48.0	48.5	54.0	54.5	0.5	Shale	
42	48.5	49.0	54.5	55.0	0.5	Shale	
43	62.0	62.5	68.0	68.5	0.5	Coal	
44	62.5	63.0	68.5	69.0	0.5	Coal	
45	63.0	63.5	69.0	69.5	0.5	Coal	
46	63.5	64.0	69.5	70.0	0.5	Coal and Shale	
47	64.0	64.5	70.0	70.5	0.5	Shale and Coal	
48*	70.5	71.0			0.5	Shale	*Pipe counted and depth adjusted for samples 15-47
49	71.0	71.5			0.5	Shale	
50	76.0	76.5			0.5	Coal and Shale	
51	76.5	77.0			0.5	Shale	
					0.0		
52	84.0	84.5			0.5	Shale and Coal	
53	84.5	85.0			0.5	Coal	
54	85.0	85.5			0.5	Coal	
55	85.5	86.0			0.5	Coal	
56	86.0	86.5			0.5	Coal	
57	86.5	87.0			0.5	Coal and Sandstone	
58	87.0	87.5			0.5	Sandstone med. - coarse, lt gy - gy	
59	87.5	88.0			0.5	Sandstone med. - coarse, lt gy - gy	

Hole ID: CM11-14							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	25.0	25.5			0.5	Coal	
2	25.5	26.0			0.5	Coal	
3	26.0	26.5			0.5	Coal	
4	26.5	27.0			0.5	Coal	
5	27.0	27.5			0.5	Shale w/ minor coal	
6	27.5	28.0			0.5	Shale and coal	70%Shale, 30%Coal
	28.0	28.5			0.5	Shale	No sample taken
7	33.0	33.5			0.5	Coal mixed w/ shale	Coal comes last
8	33.5	34.0			0.5	Coal	
9	34.0	34.5			0.5	Coal	
10	34.5	35.0			0.5	Coal w/ minor shale	
11	35.0	35.5			0.5	Coal	
12	35.5	36.0			0.5	Coal w/ minor shale	
13	36.0	36.5			0.5	Shale	
14	36.5	37.0			0.5	Shale	
					0.0		
15	68.5	69.0	65.5	66.0	0.5	Coal	*Drillers depths off by 1 pipe, depths for samples 15 - 63 corrected from logs to 3m shallower
16	69.0	69.5	66.0	66.5	0.5	Coal	
17	69.5	70.0	66.5	67.0	0.5	Coal	
18	70.0	70.5	67.0	67.5	0.5	Coal	
19	70.5	71.0	67.5	68.0	0.5	Coal	
20	71.0	71.5	68.0	68.5	0.5	Coal	
21	71.5	72.0	68.5	69.0	0.5	Coal w/ shale	
22	72.0	72.5	69.0	69.5	0.5	Shale	
	72.5	73.0	69.5	70.0	0.5	Shale	No sample taken
23	97.0	97.5	94.0	94.5	0.5	Coal	
24	97.5	98.0	94.5	95.0	0.5	Coal	
25	98.0	98.5	95.0	95.5	0.5	Coal	
26	98.5	99.0	95.5	96.0	0.5	Coal	
27	99.0	99.5	96.0	96.5	0.5	Coal	
28	99.5	100.0	96.5	97.0	0.5	Coal and shale	
29	100.0	100.5	97.0	97.5	0.5	Coal	
30	100.5	101.0	97.5	98.0	0.5	Coal	
31	101.0	101.5	98.0	98.5	0.5	Coal	
32	101.5	102.0	98.5	99.0	0.5	Coal and shale	

Hole ID: CM11-14							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
33	102.0	102.5	99.0	99.5	0.5	Coal and shale	Mostly shale
34	102.5	103.0	99.5	100.0	0.5	Shale w/ minor coal	
35	103.0	103.5	100.0	100.5	0.5	Coal	
36	103.5	104.0	100.5	101.0	0.5	Coal	
37	104.0	104.5	101.0	101.5	0.5	Shale w/ trace coal	
38	104.5	105.0	101.5	102.0	0.5	Shale	
	105.0	105.5	102.0	102.5	0.5	Shale	No sample taken
39	106.5	107.0	103.5	104.0	0.5	Coal and shale	
40	107.0	107.5	104.0	104.5	0.5	Shale	
					0.0		
41	108.5	109.0	105.5	106.0	0.5	Coal	
42	109.0	109.5	106.0	106.5	0.5	Coal and shale	
43	109.5	110.0	106.5	107.0	0.5	Coal and shale	
44	110.0	110.5	107.0	107.5	0.5	no description	
45	110.5	111.0	107.5	108.0	0.5	no description	
46	111.0	111.5	108.0	108.5	0.5	Shale w/ minor coal	
47	111.5	112.0	108.5	109.0	0.5	Shale	
48	113.5	114.0	110.5	111.0	0.5	Coal	
49	114.0	114.5	111.0	111.5	0.5	Coal	
50	114.5	115.0	111.5	112.0	0.5	Coal	
51	115.0	115.5	112.0	112.5	0.5	Coal	
52	115.5	116.0	112.5	113.0	0.5	Coal	
53	116.0	116.5	113.0	113.5	0.5	Shale w/ minor coal	
54	116.5	117.0	113.5	114.0	0.5	Shale and coal	
55	117.0	117.5	114.0	114.5	0.5	Shale and coal	
56	117.5	118.0	114.5	115.0	0.5	Shale and coal	
57	118.0	118.5	115.0	115.5	0.5	Shale and coal	Coal at top, thin, mostly shale
58	118.5	119.0	115.5	116.0	0.5	Shale w/ trace coal?	
59	120.5	121.0	117.5	118.0	0.5	Coal	
60	121.0	121.5	118.0	118.5	0.5	Shale w/ trace coal	
61	121.5	122.0	118.5	119.0	0.5	Coal	
62	122.0	122.5	119.0	119.5	0.5	Coal	
63	122.5	123.0	119.5	120.0	0.5	Shale	
					0.0		

Hole ID: CM11-14							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
64	126.5	127.0			0.5	Coal w/ minor shale	Sample depths corrected in field @ sample 64
65	127.0	127.5			0.5	Coal	
66	127.5	128.0			0.5	Coal	
67	128.0	128.5			0.5	Shale	

Hole ID: CM11-15							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	30	30.5			0.5	Coal and shale	
2	30.5	31			0.5	Coal and shale	
3	31	31.5			0.5	Coal and shale	
4	31.5	32			0.5	Shale	
5	32	32.5			0.5	Shale	
6	51.5	52	57.5	58.0	0.5	Coal w/ minor shale	
7	52	52.5	58.0	58.5	0.5	Coal	*Depths corrected to better match logs
	52.5	53	58.5	59.0	0.5	Shale	No sample taken
8	53	53.5	59.0	59.5	0.5	Coal w/ minor shale	
9	53.5	54	59.5	60.0	0.5	Coal w/ minor shale	
10	54	54.5	60.0	60.5	0.5	Coal	
11	54.5	55	60.5	61.0	0.5	Coal	
12	55	55.5	61.0	61.5	0.5	Coal	
13	55.5	56	61.5	62.0	0.5	Coal	
14	56	56.5	62.0	62.5	0.5	Coal	
15	56.5	57	62.5	63.0	0.5	Shale and coal	
16	57	57.5	63.0	63.5	0.5	Coal w/ minor shale	
17	57.5	58	63.5	64.0	0.5	Shale	
18	58	58.5	64.0	64.5	0.5	Shale and coal	
19	58.5	59	64.5	65.0	0.5	Shale w/ minor coal	
20	59	59.5	65.0	65.5	0.5	Shale	
	59.5	60	65.5	66.0	0.5	Shale	
21	68.5	69			0.5	Coal	
22	69	69.5			0.5	Coal, shaley	
23	69.5	70			0.5	Coal, shaley	
24	70	70.5			0.5	Shale and coal	
25	70.5	71			0.5	Carbonaceous shale and sandstone	
	71	71.5			0.5	Shale	No sample taken
26	78.5	79			0.5	Coal	
27	79	79.5			0.5	Coal	
28	79.5	80			0.5	Coal	
29	80	80.5			0.5	Coal, shaley	
30	80.5	81			0.5	Coal and shale	
31	81	81.5			0.5	Shale w/ minor coal	

Hole ID: CM11-15							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
32	81.5	82			0.5	Coal	
33	82	82.5			0.5	Coal	
34	82.5	83			0.5	Coal	
35	83	83.5			0.5	Coal	Shale at base
36	83.5	84			0.5	Shale	
37	90.5	91			0.5	Coal	
38	91	91.5			0.5	Coal	
39	91.5	92			0.5	Coal	
40	92	92.5			0.5	Coal and shale	
41	92.5	93			0.5	Shale	
42	93	93.5			0.5	Shale	
43	97	97.5			0.5	Shale and coal	
	97.5	98			0.5	Shale, trace coal	No sample taken
44	105.5	106			0.5	Coal w/ minor shale	
45	106	106.5			0.5	Coal and shale	
46	106.5	107			0.5	Sand	
47	107	107.5			0.5	Sand	

Hole ID: CM11-16B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	40.5	41.0			0.5	Coal	*Hole abandoned @61m due to flowing hole, abandoned without logging
2	41.0	41.5			0.5	Coal	
3	41.5	42.0			0.5	Coal and shale	
4	42.0	42.5			0.5	Coal and shale	
5	42.5	43.0			0.5	Shale	
6	43.0	43.5			0.5	Shale	

Hole ID: CM11-16C							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	29.5	30.0			0.5	Coal	Soft, scraprd off drill bit
	30.0	30.5			0.5		No Sample - Drilling problems
2	30.5	31.0			0.5	Coal and shale	Very fine coal
3	31.0	31.5			0.5	Coal and shale	
4	31.5	32.0			0.5	Coal and shale	
5	32.0	32.5			0.5	Coal, mostly shale	
6	32.5	33.0			0.5	Shale	
7	33.0	33.5			0.5	Shale	
8	60.5	61.0			0.5	Coal	
9	61.0	61.5			0.5	Coal	
10	61.5	62.0			0.5	Coal, very fine	
11	62.0	62.5			0.5	Coal, very fine	
12	62.5	63.0			0.5	Coal, very fine	
13	63.0	63.5			0.5	Coal	
14	63.5	64.0			0.5	Coal	
15	64.0	64.5			0.5	Coal and shale	
16	64.5	66.0			1.5	Shale	
17	80.0	80.5	83.0	83.5	0.5	Coal	Depths corrected from logs ~3m difference, mistake in pipe count?
18	80.5	81.0	83.5	84.0	0.5	Coal and shale	
19	81.0	81.5	84.0	84.5	0.5	Shale	
	81.5	82.0	84.5	85.0	0.5	Shale	No sample taken
					0.0		
20	87.5	88.0	90.5	91.0	0.5	Coal	
21	88.0	88.5	91.0	91.5	0.5	Coal	
22	88.5	89.0	91.5	92.0	0.5	Coal	
23	89.0	89.5	92.0	92.5	0.5	Coal and shale	
24	89.5	90.0	92.5	93.0	0.5	Shale w/ coal	
25	90.0	90.5	93.0	93.5	0.5	Shale	
26	90.5	91.0	93.5	94.0	0.5	Shale	
27	96.5	97.0	99.5	100.0	0.5	Coal	
28	97.0	97.5	100.0	100.5	0.5	Coal w/ shale	
29	97.5	98.0	100.5	101.0	0.5	Coal	
30	98.0	98.5	101.0	101.5	0.5	Coal	
31	98.5	99.0	101.5	102.0	0.5	Coal	

Hole ID: CM11-16C							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
32	99.0	99.5	102.0	102.5	0.5	Shale w/ minor coal	
33	99.5	100.0	102.5	103.0	0.5	Shale	
34	100.0	100.5	103.0	103.5	0.5	Shale	
35	100.5	101.0	103.5	104.0	0.5	Coal w/ minor shale	
36	101.0	101.5	104.0	104.5	0.5	Coal	
37	101.5	102.0	104.5	105.0	0.5	Shale	
38	102.0	102.5	105.0	105.5	0.5	Shale	

Hole ID: CM11-17							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	31.0	31.5			0.5	Coal	
2	31.5	32.0			0.5	Coal	
3	32.0	32.5			0.5	Coal	
4	32.5	33.0			0.5	Coal	
5	33.0	33.5			0.5	Coal	
6	33.5	34.0			0.5	Coal	
7	34.0	34.5			0.5	Coal and Shale	
8	34.5	35.0			0.5	Shale, trace coal	
	35.0	35.5			0.5	Shale, no sample	
	44.5	45.0			0.5	Shale w/ trace coal; No sample	
	45.0	45.5			0.5	Shale, no sample	
9	50.0	50.5			0.5	Coal and shale	Shale at base
	50.5	51.0			0.5	Shale	No sample taken
10	83.5	84.0			0.5	Coal	
11	84.0	84.5			0.5	Coal	
12	84.5	85.0			0.5	Coal	
13	85.0	85.5			0.5	Coal	
14	85.5	86.0			0.5	Coal	
15	86.0	86.5			0.5	Coal	
16	86.5	87.0			0.5	Coal	
17	87.0	87.5			0.5	Coal	
18	87.5	88.0			0.5	Coal	
19	88.0	88.5			0.5	Shale w coal; 80% shale	
20	88.5	89.0			0.5	Shale	
	89.0	89.5			0.5	Shale, no sample	
21	116.0	116.5			0.5	Coal	
22	116.5	117.0			0.5	Coal	
23	117.0	117.5			0.5	Coal	
24	117.5	118.0			0.5	Coal	
25	118.0	118.5			0.5	Coal	
26	118.5	119.0			0.5	Coal and shale	
27	119.0	119.5			0.5	Shale	
	119.5	120.0				Shale; no sample	

Hole ID: CM11-17							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	120.0	120.5				Shale; no sample	
	120.5	121.0				Shale; no sample	
28	121.0	121.5			0.5	Coal	
29	121.5	122.0			0.5	Coal	
30	122.0	122.5			0.5	Coal	
31	122.5	123.0			0.5	Coal	
32	123.0	123.5			0.5	Coal	
33	123.5	124.0			0.5	Coal	
34	124.0	124.5			0.5	Coal	
35	124.5	125.0			0.5	Coal	
36	125.0	125.5			0.5	Coal	
37	125.5	126.0			0.5	Coal w shale	
38	126.0	126.5			0.5	Coal and shale	
39	126.5	127.0			0.5	Coal	
40	127.0	127.5			0.5	No entry	
41	127.5	128.0			0.5	Shale w coal	
42	128.0	128.5			0.5	Shale w minor coal	
43	128.5	129.0			0.5	Shale, trace coal	
44	129.0	129.5			0.5	Shale w minor coal	
45	129.5	130.0			0.5	Shale and coal	
46	130.0	130.5			0.5	Coal, shale at base	
47	130.5	131.0			0.5	Shale, minor coal	
48	133.5	134.0			0.5	Coal	
49	134.0	134.5			0.5	Coal, shaley	
50	134.5	135.0			0.5	Coal	
51	135.0	135.5			0.5	Coal	
52	135.5	136.0			0.5	Coal, shaley	
53	136.0	136.5			0.5	Coal, shale at base	
54	138.5	139.0			0.5	Coal, shale at base	
55	142.5	143.0			0.5	Coal	
56	143.0	143.5			0.5	Coal	
57	143.5	144.0			0.5	Coal and shale	
58	144.0	144.5			0.5	Coal, minor shale	
59	144.5	145.0			0.5	Coal	

Hole ID: CM11-17							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
60	145.0	145.5			0.5	Coal, shale at base	
61	145.5	146.0			0.5	Coal and shale	
62	146.0	146.5			0.5	Coal	
63	146.5	147.0			0.5	Coal, shale in lower half	
64	151.0	151.5			0.5	Coal and shale	
65	155.5	156.0			0.5	Coal	
66	156.0	156.5			0.5	Coal	
67	156.5	157.0			0.5	Coal and shale	
68	157.0	157.5			0.5	Coal and sandstone	
69	157.5	158.0			0.5	Coal and sandstone	
70	158.0	158.5			0.5	Coal and shale	
71	158.5	159.0			0.5	Coal and shale	
72	159.0	159.5			0.5	Coal and shale	
73	159.5	160.0			0.5	Coal and shale	
74	160.0	160.5			0.5	Shale, minor coal	

Hole ID: CM11-18							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	47.0	47.5			0.5	Coal	
2	47.5	48.0			0.5	Coal	
3	48.0	48.5			0.5	Coal	
4	48.5	49.0			0.5	Coal	
5	49.0	49.5			0.5	Coal	
6	49.5	50.0			0.5	Coal	
7	50.0	50.5			0.5	Shale w/ coal	
8	50.5	51.0			0.5	Shale	
	51.0	51.5			0.5	Shale	No sample taken
	80.0	82.0			2.0	Dark brown Shale	"drills like coal" no sample taken
9	82.0	82.5			0.5	Coal	
10	82.5	83.0			0.5	Coal and shale	Shale comes last
11	83.0	83.5			0.5	Shale	
12	83.5	84.0			0.5	Shale	
	84.0	84.5				Shale	No sample taken
13	85.5	86.0			0.5	Coal	
14	86.0	86.5			0.5	Coal and shale	Shale comes last
15	86.5	87.0			0.5	Shale w/ very minor coal	
	87.0	87.5				Shale	No sample taken
16	92.5	93.0			0.5	Coal	
17	93.0	93.5			0.5	Shale and coal	Shale is dominant
	93.5*	94.0			0.5	Shale	*No sample taken - sample was discarded by GED helper
	97.0					Large blocks of Siltstone/sandstone	
18	98.5	99.0			0.5	Coal w/ carbonaceous shale	
19	99.0	99.5			0.5	Coal w/ carbonaceous shale	
20	99.5	100.0			0.5	Coal w/ carbonaceous shale	
21	100.0	100.5			0.5	Coal w/ Sandstone	
22	100.5	101.0			0.5	Shale w/ minor coal	
23	101.0	101.5			0.5	Coal	
24	101.5	102.0			0.5	Coal	
25	102.0	102.5			0.5	Coal	

Hole ID: CM11-18							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
26	102.5	103.0			0.5	Shale	
27	103.0	103.5			0.5	Dark grey siltstone/sandstone	

Hole ID: CM11-19							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	23.0	23.5			0.5	Shale w/ minor coal	
2	23.5	24.0			0.5	Shale and coal	
3	24.0	24.5			0.5	Coal and shale	
4	24.5	25.0			0.5	Coal and shale	
5	25.0	25.5			0.5	Coal w/ minor shale	
6	25.5	26.0			0.5	Coal	
7	26.0	26.5			0.5	Shale w/ minor coal	
	26.5	27.0			0.5	Shale	No sample taken
8	46.5	47.0			0.5	Coal	Very small sample
9	47.0	47.5			0.5	Coal	Very small sample
10	47.5	48.0			0.5	Coal	Very small sample
11	48.0	48.5			0.5	Shale and coal	Coal comes first
12	48.5	49.0			0.5	Shale w/ minor coal	80% shale
	49.0	49.5			0.5	Shale	No sample taken
	51.0	51.5			0.5	Shale w/ trace coal shows	Stringers - No sample taken
	69.0	69.5			0.5	Shale w/ trace coal shows	Stringers - No sample taken
	75.5	76.0			0.5	Shale w/ trace coal	
13	76.0	76.5			0.5	Coal w/ trace shale on top	Very small sample
14	76.5	77.0			0.5	Coal and shale	
15	77.0	77.5			0.5	Shale w/ trace coal	
	77.5	78.0			0.5	Shale	No sample taken
	78.0	78.5			0.5	Shale	No sample taken
16	111.0	111.5			0.5	Coal, shaley	
17	111.5	112.0			0.5	Coal	
18	112.0	112.5			0.5	Coal and shale	
19	112.5	113.0			0.5	Shale w/ minor coal	
20	113.0	113.5			0.5	Shale	
21	113.5	114.0			0.5	Shale w/ minor coal	
22	114.0	114.5			0.5	Coal	
23	114.5	115.0			0.5	Coal	
24	115.0	115.5			0.5	Coal	
25	115.5	116.0			0.5	Shale w/ trace coal	
26	116.0	116.5			0.5	Shale	

Hole ID: CM11-19							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	116.5	117.0			0.5	Shale	No sample taken
27	119.0	119.5			0.5	Coal	
28	119.5	120.0			0.5	Coal w/ minor shale	
29	120.0	120.5			0.5	Coal	
30	120.5	121.0			0.5	Coal	
31	121.0	121.5			0.5	Coal	
32	121.5	122.0			0.5	Shale and coal	
33	122.0	122.5			0.5	Shale w/ trace coal	
	122.5	123.0			0.5	Shale	No sample taken
34	131.5	132.0			0.5	Coal, shaley	
35	132.0	132.5			0.5	Coal	
36	132.5	133.0			0.5	Coal	
37	133.0	133.5			0.5	Coal	Small sample
38	133.5	134.0			0.5	Coal	Small sample
39	134.0	134.5			0.5	Coal	Small sample
40	134.5	135.0			0.5	Coal	Small sample
41	135.0	135.5			0.5	Coal	
42	135.5	136.0			0.5	Coal	
43	136.0	136.5			0.5	Coal	
44	136.5	137.0			0.5	Shale w/ minor coal	
45	137.0	137.5			0.5	Shale w/ trace coal	
	137.5	138.0			0.5	Shale	No sample taken
46	147.5	148.0			0.5	Coal	
47	148.0	148.5			0.5	Coal	
48	148.5	149.0			0.5	Coal	
49	149.0	149.5			0.5	Shale w/ minor coal	
50	149.5	150.0			0.5	Shale	
51	168.5	169.0			0.5	Coal, sandstone at base	

Hole ID: CM11-20							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	34.0	34.5			0.5	Coal	
2	34.5	35.0			0.5	Coal	
3	35.0	35.5			0.5	Coal	
4	35.5	36.0			0.5	Coal	
5	36.0	36.5			0.5	Coal	
6	36.5	37.0			0.5	Coal	
7	37.0	37.5			0.5	Coal w/ minor shale	
8	37.5	38.0			0.5	Shale	
9	38.0	38.5			0.5	Shale	
	38.5	39.0			0.5	Shale	No sample taken
10	72.0	72.5			0.5	Coal	
11	72.5	73.0			0.5	Coal	
12	73.0	73.5			0.5	Shale w/ trace coal	
	73.5	74.0				Shale	No sample taken
13	74.0	74.5			0.5	Coal	
14	74.5	75.0			0.5	Coal	
	75*	75.5				No sample	*GED helper threw out sample
15	75.5	76.0			0.5	Shale	
16	80.5	81.0			0.5	Shale and coal	
17	81.0	81.5			0.5	Shale and coal	
18	81.5	82.0			0.5	Coal, shaley	
19	82.0	82.5			0.5	Shale w/ minor coal	
20	91.5	92.0			0.5	Coal, shaley	
21	92.0	92.5			0.5	Coal, shaley	
22	92.5	93.0			0.5	Coal	
23	93.0	93.5			0.5	Coal, shaley	
24	93.5	94.0			0.5	Coal w/ minor shale	
25	94.0	94.5			0.5	Coal w/ minor shale	
26	94.5	95.0			0.5	Coal	
27	95.0	95.5			0.5	Coal, shaley	
28	95.5	96.0			0.5	Coal and shale	
29	96.0	96.5			0.5	Coal and shale	
30	96.5	97.0			0.5	Coal and shale	
31	97.0	97.5			0.5	Coal w/ minor shale	

Hole ID: CM11-20							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	97.5	98.0				Sandstone	No sample taken
32	107.5	108.0			0.5	Coal	
33	108.0	108.5			0.5	Coal	
34	108.5	109.0			0.5	Coal and sandstone	
35	123.5	124.0			0.5	Coal	
36	124.0	124.5			0.5	Coal and shale	

Hole ID: CM11-21							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	27	27.5			0.5	Shale and coal	
2	27.5	28			0.5	Coal	
3	28	28.5			0.5	Shale	
	28.5	29			0.5	Shale	No sample taken
4	40.5	41			0.5	Coal w/ minor shale	
5	41	41.5			0.5	Shale	
6	41.5	42			0.5	Shale	
7	44	44.5			0.5	Coal	
8	44.5	45			0.5	Shale w/ coal	
9	45	45.5			0.5	Shale	
10	45.5	46			0.5	Shale	
11	47	47.5			0.5	Coal	
12	47.5	48			0.5	Coal and shale	
13	48	48.5			0.5	Shale	
14	48.5	49			0.5	Shale	
15	53	53.5			0.5	Coal	
16	53.5	54			0.5	Shale	
17	54	54.5			0.5	Shale	

Hole ID: CM11-22							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	41.0	41.5			0.5	Shale w/ minor coal	
2	41.5	42.0			0.5	Shale w/ siltstone	
3	42.0	42.5			0.5	Shale w/ minor coal	
4	42.5	43.0			0.5	Coal w/ minor shale	
5	43.0	43.5			0.5	Coal	
6	43.5	44.0			0.5	Coal and shale	
7	44.0	44.5			0.5	Shale	
8	44.5	45.0			0.5	Shale w/ minor siltstone	
	45.0	45.5			0.5	Shale	No sample taken
9	45.5	46.0			0.5	Shale w/ minor coal	
	46.0	46.5			0.5	Shale	
10	77.0	77.5			0.5	Coal w/ minor shale	
11	77.5	78.0			0.5	Coal	
12	78.0	78.5			0.5	Coal	
13	78.5	79.0			0.5	Coal	
14	79.0	79.5			0.5	Coal	
15	79.5	80.0			0.5	Coal	
16	80.0	80.5			0.5	Coal	
17	80.5	81.0			0.5	Coal and shale	
18	81.0	81.5			0.5	Shale	
19	81.5	82.0			0.5	Shale	
	101.0	101.5				Dark grey carbonaceous shale	No sample taken
20	101.5	102.0			0.5	Coal w/ minor shale	Coal comes last
21	102.0	102.5			0.5	Coal	
22	102.5	103.0			0.5	Coal w/ minor shale	
23	103.0	103.5			0.5	Coal	
24	103.5	104.0			0.5	Coal and shale	
25	104.0	104.5			0.5	Shale	
26	104.5	105.0			0.5	Shale	
27	107.5	108.0			0.5	Coal and shale	Shale comes last
28	108.0	108.5			0.5	no description	
29	110.0	110.5			0.5	Coal	
30	110.5	111.0			0.5	Coal	

Hole ID: CM11-22							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
31	111.0	111.5			0.5	Shale	
32	111.5	112.0			0.5	Shale	
33	115.0	115.5			0.5	Coal and shale	
34	115.5	116.0			0.5	Coal and shale	
35	116.0	116.5			0.5	Coal and shale	
36	116.5	117.0			0.5	Coal and shale	
37	117.0	117.5			0.5	Shale w/ minor coal	
38	117.5	118.0			0.5	Shale	
	118.0	118.5			0.5	Shale	No sample taken
39	118.5	119.0			0.5	Coal and shale	
40	119.0	119.5			0.5	Coal	
41	119.5	120.0			0.5	Coal	
42	120.0	120.5			0.5	Coal	
43	120.5	121.0			0.5	Coal	
44	121.0	121.5			0.5	Coal	
45	121.5	122.0			0.5	Coal	
46	122.0	122.5			0.5	Coal and shale	
47	122.5	123.0			0.5	Shale	
48	123.0	123.5			0.5	Shale	
49	123.5	124.0			0.5		No sample #49
50	124.0	124.5	123.5	124.0	0.5	Coal	
51	124.5	125.0	124.0	124.5	0.5	Coal and shale	
52	125.0	125.5	124.5	125.0	0.5	Shale	
53	141.5	142.0			0.5	Coal	
54	142.0	142.5			0.5	Coal	
55	142.5	143.0			0.5	Coal	
56	143.0	143.5			0.5	Coal and shale	
57	143.5	144.0			0.5	Coal and shale	
58	144.0	144.5			0.5	Coal and shale	
59	144.5	145.0			0.5	Coal and shale	
60	148.5	149.0			0.5	Coal	
61	149.0	149.5			0.5	Shale	
62	149.5	150.0			0.5	Shale	

Hole ID: CM11-22							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
63	157.5	158.0			0.5	Coal	
64	158.0	158.5			0.5	Coal and shale	
65	158.5	159.0			0.5	Shale	
66	159.0	159.5			0.5	Shale	

Hole ID: CM11-22B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	11.0					Sandstone	
	13.0					Shale	
	16.0					Sandstone	
	19.0					Sandstone w/ minor shale	
	20.0					Shale w/ coal shows	No sample taken
	22.0					Siltstone and shale	
	25.0					Shale w/ coal shows	
	28.0					Shale and siltstone	
	31.0					Shale and siltstone	
	34.0					Shale and siltstone	
	37.0					Shale and siltstone w/ coal shows	
1	39.0	39.5			0.5	Coal	
2	39.5	40.0			0.5	Coal	
3	40.0	40.5			0.5	Coal	
4	40.5	41.0			0.5	Coal	
5	41.0	41.5			0.5	Coal	
6	41.5	42.0			0.5	Coal w/ carbonaceous shale	
7	42.0	42.5			0.5	Coal w/ carbonaceous shale	
8	42.5	43.0			0.5	Coal w/ shale	
9	43.0	43.5			0.5	Shale w/ minor coal	
10	43.5	44.0			0.5	Coal	
11	44.0	44.5			0.5	Coal	
12	44.5	45.0			0.5	Coal	
13	45.0	45.5			0.5	Coal and shale	
14	45.5	46.0			0.5	Shale and coal	
15	46.0	46.5			0.5	Coal and shale	
16	46.5	47.0			0.5	Coal	
17	47.0	47.5			0.5	Coal and shale	
18	47.5	48.0			0.5	Shale w/ coal	
19	48.0	48.5			0.5	Shale	
20	48.5	49.0			0.5	Shale	
	52.0					Shale w/ minor siltstone	
	55.0					Shale and Sandstone	
	58.0					Shale w/ minor siltstone	
	61.0					Shale (carbonaceous?) w/ coal shows	

Hole ID: CM11-22B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	64.0					Sandstone and siltstone	
	67.0					Sandstone	
	70.0					Sandstone	
	73.0					Sandstone	
	76.0					Sandstone	
	77.0	77.5			0.5	Coal	No sample taken - very little return
21	77.5	78.0			0.5	Coal	
22	78.0	78.5			0.5	Coal	
23	78.5	79.0			0.5	Coal	
24	79.0	79.5			0.5	Coal	
25	79.5	80.0			0.5	Coal	
26	80.0	80.5			0.5	Coal	
27	80.5	81.0			0.5	Coal	
28	81.0	81.5			0.5	Coal	
29	81.5	82.0			0.5	Coal and shale	
30	82.0	82.5			0.5	Coal and shale	
31	82.5	83.0			0.5	Carbonaceous shale	
32	83.0	83.5			0.5	Shale	
33	83.5	84.0			0.5	Shale	
	86.0					Sandstone	
	89.0					Sandstone	
	91.0					Sandstone	
	94.0					Sandstone	
	97.0					Sandstone	
34	99.5	100.0			0.5	Carbonaceous shale	
35	100.0	100.5			0.5	Carbonaceous shale and coal	
36	100.5	101.0			0.5	Coal and carbonaceous shale	
37	101.0	101.5			0.5	Coal and carbonaceous shale	
38	101.5	102.0			0.5	Coal and trace carbonaceous shale	
39	102.0	102.5			0.5	Coal	
40	102.5	103.0			0.5		
41	103.0	103.5			0.5	Coal and carbonaceous shale	
42	103.5	104.0			0.5	Shale	

Hole ID: CM11-22B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	107.0	107.5			0.5	Shale	
43	107.5	108.0			0.5	Coal	
44	108.0	108.5			0.5	Coal	
45	108.5	109.0			0.5	Shale and coal	
46	109.0	109.5			0.5	Shale	
47	109.5	110.0			0.5	Shale	
	112.0					Shale	
48	113.0	113.5			0.5	Coal	
49	113.5	114.0			0.5	Coal	
50	114.0	114.5			0.5	Coal	
51	114.5	115.0			0.5	Coal	
52	115.0	115.5			0.5	Coal	
53	115.5	116.0			0.5	Coal	
54	116.0	116.5			0.5	Coal w/ minor shale	
55	116.5	117.0			0.5	Shale	
56	117.0	117.5			0.5	Shale	
57	117.5	118.0			0.5	Coal w/ minor shale	
58	118.0	118.5			0.5	Coal	
59	118.5	119.0			0.5	Coal	
60	119.0	119.5			0.5	Coal	
61	119.5	120.0			0.5	Coal	
62	120.0	120.5			0.5	Coal	
63	120.5	121.0			0.5	Coal	
64	121.0	121.5			0.5	Coal	
65	121.5	122.0			0.5	Coal w/ minor shale	
66	122.0	122.5			0.5	Sandstone and shale	
67	122.5	123.0			0.5	Sandstone and shale	
	124.0					Sandstone	
	127.0					Sandstone	
	130.0					Sandstone	
68	133.0	133.5			0.5	Coal	
69	133.5	134.0			0.5	Shale w/ trace coal	
70	134.0	134.5			0.5	Sandstone	

Hole ID: CM11-22B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	136.0					Sandstone	
	139.0					Sandstone	
71	142.0	142.5				Coal	
72	142.5	143.0				Coal	
73	143.0	143.5				Coal	
74	143.5	144.0				Shale	
75	144.0	144.5				Shale	
76	144.5	145.0				Sand	
	148.0					Shale and sandstone	
	151.0					Sandstone	
	154.0					Sandstone	
77	157.0	157.5				Coal and shale	
78	157.5	158.0				Coal	
79	158.0	158.5				Coal w/ minor sand	
80	158.5	159.0				Sand w/ minor coal	
81	159.0	159.5				Sand	

Hole ID: CM12-01A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	0.0					Dark Shale	
	4.0					Shale	
	10.0					Shale	Problems with RC
1	14.0	14.5			0.5	Carbonaceous Shale, trace coal	
2	14.5	15.0			0.5	Coal, sand intbds	
3	15.0	15.5			0.5	Coal	
4	15.5	16.0			0.5	Carbonaceous Shale, trace coal	
5	16.0	16.5			0.5	Carbonaceous Shale, trace coal	
6	16.5	17.0			0.5	Coal, trace carb shale	
7	17.0	17.5			0.5	Coal	
8	17.5	18.0			0.5	Coal, silty shale stringers	
9	18.0	18.5			0.5	Coal, silty shale stringers	
10	18.5	19.0			0.5	Coal	
11	19.0	19.5			0.5	Coal, silty shale stringers	
12	19.5	20.0			0.5	Coal, silty shale stringers	
13	20.0	20.5			0.5	Coal	
14	20.5	21.0			0.5	Coal	
15	21.0	21.5			0.5	Coal, silty shale stringers	
16	21.5	22.0			0.5	Coal, Carb shale	
17	22.0	22.5			0.5	Carbonaceous Shale, trace coal	
18	22.5	23.0			0.5	Coal	
19	23.0	23.5			0.5	Coal, trace carb shale	
20	23.5	24.0			0.5	Coal, Carb shale	
21	24.0	24.5			0.5	Coal, Carb shale	
22	24.5	25.0			0.5	Coal, Carb shale	
23	25.0	25.5			0.5	Coal, trace carb shale	
24	25.5	26.0			0.5	Coal, trace carb shale	
25	26.0	26.5			0.5	Coal, Carb shale	
26	26.5	27.0			0.5	Shale	
27	27.0	27.5			0.5	Shale	
	28.0					Shale	
	31.0					Carb Shale	
	34.0					Carb shale, SS stringers	
	37.0					Brn SS, tr shale	
	40.0					Brn SS, tr shale	Tr coal at base no sample

Hole ID: CM12-01A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
28	43.0	43.5			0.5	Coal	
29	43.5	44.0			0.5	Coal	
30	44.0	44.5			0.5	Coal	
31	44.5	45.0			0.5	Coal	
32	45.0	45.5			0.5	Coal w/ carb shale	
33	45.5	46.0			0.5	Coal w/ minor carb shale	
34	46.0	46.5			0.5	Coal w/ minor carb shale	
35	46.5	47.0			0.5	Coal and shale	small sample
36	47.0	47.5			0.5	Shale	
37	47.5	48.0			0.5	Shale	
	48.0	48.5				Shale	no sample taken
	52.0					Shale	
38	55.0	55.5	54.5	55.0	0.5	Coal w/ minor shale	Depths adjusted from logs
39	55.5	56.0	55.0	55.5	0.5	Shale and Coal	
40	56.0	56.5	55.5	56.0	0.5	Shale	
41	56.5	57.0	56.0	56.5	0.5	Shale	
	73.0					Shale and Sandstone	
	76.0					Shale and Sandstone	
	79.0					med. grained Sandstone	
	82.0					med. grained Sandstone	
	85.0					Shale and Sandstone	
	88.0					Shale	
	91.0					Shale	
	94.0					Shale w/minor siltstone	
	100.0					Shale	
42	102.5	103.0			0.5	Coal	
43	103.0	103.5			0.5	Coal	
44	103.5	104.0			0.5	Coal	
45	104.0	104.5			0.5	Coal	
46	104.5	105.0			0.5	Coal w/ minor shale	
47	105.0	105.5			0.5	Shale	
48	105.5	106.0			0.5	Shale w/Trace coal	
49	106.0	106.5			0.5	Coal	

Hole ID: CM12-01A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
50	106.5	107.0			0.5	Coal	
51	107.0	107.5			0.5	Coal	
52	107.5	108.0			0.5	Coal	
53	108.0	108.5			0.5	Coal and shale	
54	108.5	109.0			0.5	Shale	
	109.0	109.5			0.5	Shale	no sample taken
	112.0					Shale	
	115.0					Shale	
55	115.5	116.0			0.5	Coal, minor shale on top	
56	116.0	116.5			0.5	Coal	
57	116.5	117.0			0.5	Coal	
58	117.0	117.5			0.5	Coal and shale	
59	117.5	118.0			0.5	Shale	
60	118.0	118.5			0.5	Shale	
61	118.5	119.0			0.5	Coal	
62	119.0	119.5			0.5	Shale	
63	119.5	120.0			0.5	Shale and Sandstone	
	120.0	120.5			0.5	Sandstone	no sample taken
	120.5	124.0			3.5	Sandstone	
	124.0					Sandstone	
	127.0					Sandstone	
	130.0					Sandstone w/ minor shale	
	133.0					Sandstone	
	136.0					Sandstone	
64	138.0	138.5			0.5	Coal w/ Shale	
65	138.5	139.0			0.5	Shale	
66	139.0	139.5			0.5	Shale w/ Minor Coal	
67	139.5	140.0			0.5	Shale	
	140.0	140.5			0.5	Sandstone	no sample taken
	140.5	141.0			0.5	Sandstone	
68	141.0	141.5			0.5	Coal w/ carb shale	
69	141.5	142.0			0.5	Coal w/ carb shale	
70	142.0	142.5			0.5	Carb shale w/ Coal	

Hole ID: CM12-01A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
71	142.5	143.0			0.5	Carb shale w/ Coal	
72	143.0	143.5			0.5	Coal w/ carb shale	
73	143.5	144.0			0.5	Coal	
74	144.0	144.5			0.5	Coal w/ trace shale	
75	144.5	145.0			0.5	Coal	
76	145.0	145.5			0.5	Coal	
77	145.5	146.0			0.5	Coal	
78	146.0	146.5			0.5	Coal	
79	146.5	147.0			0.5	Coal	
80	147.0	147.5			0.5	Coal	
81	147.5	148.0			0.5	Coal	
82	148.0	148.5			0.5	Coal w/ trace shale	
83	148.5	149.0			0.5	Coal w/ carb shale	
84	149.0	149.5			0.5	Coal w/ carb shale	
85	149.5	150.0			0.5	Carb shale with coal	
86	150.0	150.5			0.5	Shale w/ carb shale, trace coal	
87	150.5	151.0			0.5	Carb shale	
88	151.0	151.5			0.5	Carb shale	
	151.5	152.0			0.5	Shale	no sample taken
89	153.5	154.0			0.5	Carb Shale w/ coal interbeds	
90	154.0	154.5			0.5	Coal and carb shale	
91	154.5	155.0			0.5	Shale and carb shale tr coal	
92	155.0	155.5			0.5	shale, tr carb shale	
	155.5	156.0			0.5	Shale	no sample taken
	157.0					silty med gray shale	
	160.0					silty med gray shale	
	163.0					silty med gray shale	
93	165.0	165.5			0.5	Carb Shale	
94	165.5	166.0			0.5	shale, tr carb shale	
	166.0	166.5			0.5	Shale	no sample taken
95	166.5	167.0			0.5	Coal and tr shale	
96	167.0	167.5			0.5	Coal and carb shale	
97	167.5	168.0			0.5	Coal and carb shale	
98	168.0	168.5			0.5	Shale and tr carb shale	

Hole ID: CM12-01A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	168.5	169.0			0.5	shale	
	172.0					med. grained Sandstone	
99	174.0	174.5			0.5	Coal	
100	174.5	175.0			0.5	Coal, med grained sandstone	
	175.0					med. grained Sandstone	

Hole ID: CM12-01B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	6.0					weathered coal	no sample - behind casing
	9.0					weathered coal	no sample - behind casing
	12.0					carbonaceous shale	
	13.0					carbonaceous shale	
	13.5					carbonaceous shale w/trace coal	no sample taken
	16.0					shale	
1	18.5	19.0				carbonaceous shale w/trace coal	
2	19.0	19.5				coal and shale	
3	19.5	20.0				coal and shale	
4	20.0	20.5				coal	
5	20.5	21.0				coal w/trace carbonaceous shale	
6	21.0	21.5				coal w/trace carbonaceous shale	
7	21.5	22.0				coal w/trace carbonaceous shale	
8	22.0	22.5				coal w/trace carbonaceous shale	
9	22.5	23.0				coal w/trace carbonaceous shale	
10	23.0	23.5				coal w/minor shale	
11	23.5	24.0				coal w/trace shale	
12	24.0	24.5				coal	
13	24.5	25.0				coal	
14	25.0	25.5				coal	
15	25.5	26.0				coal	
16	26.0	26.5				coal	
17	26.5	27.0				coal	
18	27.0	27.5				coal	
19	27.5	28.0				coal	
20	28.0	28.5				coal	very small sample
21	28.5	29.0				coal	very small sample
22	29.0	29.5				shale w/trace coal	
23	29.5	30.0				shale	
24	30.0	30.5				shale and coal	
	30.5	31.0				shale	no sample taken
25	31.5	32.0				shale and coal	coal on top (stringer)
	32.0	32.5				shale	no sample taken
26	32.5	33.0				coal and carbonaceous shale	
27	33.0	33.5				coal w/minor carbonaceous shale	

Hole ID: CM12-01B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
28	33.5	34.0				coal	
29	34.0	34.5				coal	
30	34.5	35.0				coal w/minor carbonaceous shale	
31	35.0	35.5				shale	
32	35.5	36.0				shale	
33	36.0	36.5				coal w/minor shale	
34	36.5	37.0				coal w/minor carbonaceous shale	
35	37.0	37.5				coal	
36	37.5	38.0				coal and shale	
37	38.0	38.5				shale	
38	38.5	39.0				carbonaceous shale and coal	
39	39.0	39.5				carbonaceous shale and coal	
40	39.5	40.0				shale	
	40.0	40.5				shale	no sample taken
	40.5	41.0				shale	no sample taken
41	41.0	41.5				coal	
42	41.5	42.0				coal	
43	42.0	42.5				coal	
44	42.5	43.0				coal	
45	43.0	43.5				coal	
46	43.5	44.0				coal	
47	44.0	44.5				coal	
48	44.5	45.0				coal	
49	45.0	45.5				coal w/minor carbonaceous shale	
50	45.5	46.0				coal and carbonaceous shale	
51	46.0	46.5				coal	hard, large pieces, boney coal(?)
52	46.5	47.0				coal	
53	47.0	47.5				shale and coal	
54	47.5	48.0				shale	
	48.0	48.5				shale	no sample taken
	48.5	49.0				shale	no sample taken
	52.0					shale	
	58.0					sandstone and fine-med grained	
	64.0					siltstone and shale	
	67.0					sandstone, med grained	
	70.0					sandstone, med grained	

Hole ID: CM12-01B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	73.0					sandstone and shale	
	74.0					sandstone, med grained	
	79.0					sandstone, med grained	
	82.0					sandstone, med grained	
	85.0					sandstone, med grained	
	88.0					shale	
	91.0					shale and siltstone	
	94.0					shale	
	97.0					siltstone, sandstone, shale	
	100.0					shale	
	103.0					shale	
55	106.5	107.0				coal	
56	107.0	107.5				coal	
57	107.5	108.0				coal	
58	108.0	108.5				coal	
59	108.5	109.0				coal	
60	109.0	109.5				coal w/minor shale	
61	109.5	110.0				coal and shale	
62	110.0	110.5				coal and shale	
63	110.5	111.0				coal	
64	111.0	111.5				coal	
65	111.5	112.0				coal	
66	112.0	112.5				coal with sand and shale grains	
67	112.5	113.0				coal	
68	113.0	113.5				shale and coal	
69	113.5	114.0				shale with trace coal	
70	114.0	114.5				shale	
	118.0					sandstone	
	121.0					sandstone	
71	123.5	124.0				carbonaceous shale and coal	
72	124.0	124.5				coal	
73	124.5	125.0				coal	
74	125.0	125.5				shale with coal	
75	125.5	126.0				shale	

Hole ID: CM12-01B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	130.0					shale	
	133.0					shale	
	136.0					shale	
	139.0					shale	
	142.0					shale	
	145.0					shale	
	148.0					shale	

Hole ID: CM12-04							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	7.0					Medium grained sandstone	Orange weathering common
	10.0					Medium grained sandstone	Orange weathering common
	13.0					shale with trace sandstone	
1	14.5	15.0			0.5	shale and coal (shale on top)	very small sample
	15.0	15.5			0.5	shale	dry, no sample taken
	15.5	16.0			0.5	shale	dry, no sample taken
							16-18m: Poor return of cuttings from cyclone
2	18.0	18.5			0.5	coal	
3	18.5	19.0			0.5	coal	very small & dry (drilled with air)
4	19.0	19.5			0.5	coal	very small & dry (drilled with air)
5	19.5	20.0			0.5	coal and shale	very small, dry sample
6	20.0	20.5			0.5	coal with shale	shale possibly from uphole
7	20.5	21.0			0.5	coal	
8	21.0	21.5			0.5	coal	
9	21.5	22.0			0.5	coal	
10	22.0	22.5			0.5	coal	small sample
11	22.5	23.0			0.5	coal	
12	23.0	23.5			0.5	coal and shale	
13	23.5	24.0			0.5	shale and coal	
14	24.0	24.5			0.5	shale	
	24.5	25.0			0.5	shale	no sample taken
	25.0	25.5			0.5	shale with minor coal shows	no sample taken
15	28.0	28.5			0.5	coal and carbonaceous shale	
16	28.5	29.0			0.5	coal	
17	29.0	29.5			0.5	coal	
18	29.5	30.0			0.5	carbonaceous shale and coal	
19	30.0	30.5			0.5	carbonaceous shale	minor coal shows
	30.5	31.0			0.5	shale	no sample taken
20	40.5	41.0			0.5	coal and shale	
21	41.0	41.5			0.5	coal	
22	41.5	42.0			0.5	coal	
23	42.0	42.5			0.5	coal	
24	42.5	43.0			0.5	coal	

Hole ID: CM12-04							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
25	43.0	43.5			0.5	coal	
26	43.5	44.0			0.5	coal	
27	44.0	44.5			0.5	coal	
28	44.5	45.0			0.5	coal	
	45.0	45.5			0.5	shale	no sample taken
	45.5	46.0			0.5	shale	no sample taken
29	49.5	50.0			0.5	coal	
30	50.0	50.5			0.5	coal	
31	50.5	51.0			0.5	shale	
	51.0	51.5			0.5	shale	no sample taken
	51.5	52.0			0.5	shale	no sample taken
	55.0					shale	
	58.0					shale	
	61.0					shale	
	64.0					shale	
	67.0					mg-fg sandstone with coal shows	
	70.0					mg-fg sandstone with coal shows	
	73.0					mg-fg sandstone with coal shows	
	76.0					mg-fg sandstone with coal shows	
	79.0					mg-fg sandstone with coal shows	
	82.0					shale	
	85.0					sandstone	
	88.0					shale	
32	88.5	89.0			0.5	carbonaceous shale with coal(?)	
	94.0					shale	
	97.0					shale	
	100.0					shale	
	103.0					shale	
	106.0					shale	
33	109.5	110.0			0.5	coal	
34	110.0	110.5			0.5	coal	
35	110.5	111.0			0.5	coal	

Hole ID: CM12-04							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
36	111.0	111.5			0.5	coal	
37	111.5	112.0			0.5	shale with coal	
38	112.0	112.5			0.5	coal	
39	112.5	113.0			0.5	coal	
40	113.0	113.5			0.5	coal	
41	113.5	114.0			0.5	coal	
42	114.0	114.5			0.5	shale	
43	114.5	115.0			0.5	shale	
44	115.0	115.5			0.5	shale, minor coal	
	115.5	116.0			0.5	shale	no sample taken
	118.0					sandstone, vfg-fg, med gy	
	121.0					sandstone, vfg-fg, med gy	
	124.0					sandstone, vfg-fg, med gy	
45	125.0	125.5			0.5	coal	
46	125.5	126.0			0.5	shale, trace coal	
	126.0	126.5			0.5	shale	no sample taken
	127.0					siltstone	
	130.0					siltstone	
	133.0					sandstone	
	136.0					sandstone	
47	138.0	138.5			0.5	coal	
48	138.5	139.0			0.5	shale, trace coal	
49	139.0	139.5			0.5	shale	
50	141.0	141.5			0.5	coal	
51	141.5	142.0			0.5	shale with minor coal	coal on top
52	142.0	142.5			0.5	shale with minor coal	
53	142.5	143.0			0.5	shale with coal	
54	143.0	143.5			0.5	coal	
55	143.5	144.0			0.5	coal and shale	
56	144.0	144.5			0.5	carbonaceous shale	
57	144.5	145.0			0.5	carbonaceous shale	
58	145.0	145.5			0.5	coal with shale	

Hole ID: CM12-04							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
59	145.5	146.0			0.5	coal with shale	
60	146.0	146.5			0.5	shale and coal	
61	146.5	147.0			0.5	coal with shale	
62	147.0	147.5			0.5	carbonaceous shale	
63	147.5	148.0			0.5	carbonaceous shale	
64	148.0	148.5			0.5	carbonaceous shale	
65	148.5	149.0			0.5	carbonaceous shale	
66	149.0	149.5			0.5	carbonaceous shale	
67	149.5	150.0			0.5	shale, trace coal	
68	150.0	150.5			0.5	shale	
69	153.5	154.0			0.5	coal	
70	154.0	154.5			0.5	carbonaceous shale and coal	
71	154.5	155.0			0.5	shale	
	157.0					shale, siltstone and fg-mg SS	
	160.0					shale, siltstone and fg-mg SS	
	163.0					shale, siltstone and fg-mg SS	
72	163.5	164.0			0.5	coal	
73	164.0	164.5			0.5	coal with trace shale	
74	164.5	165.0			0.5	carbonaceous shale and shale	
	165.0	165.5			0.5	shale	no sample taken
	166.0					shale	
	169.0					SS, mg-cg, med gy with occ orange	hard, drills slow
	172.0					sandstone, mg-cg, trace shale	shale possibly from uphole
	175.0					sandstone, mg-cg, trace shale	shale possibly from uphole
	178.0					sandstone, mg-cg, trace shale	shale possibly from uphole
	181.0					sandstone, mg-cg	shale possibly from uphole

Hole ID: CM12-06							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	19					Siltstone and SS, minor shale	Orange weathering common
	22					Carbonaceous shale and siltstone	Small bed of carb shale, siltstone after pipe connection
	25					Shale and siltstone	
1	28	28.5	27	27.5	0.5	Coal	
2	28.5	29	27.5	28	0.5	Coal	
3	29	29.5	28	28.5	0.5	Coal	
4	29.5	30	28.5	29	0.5	Coal	
5	30	30.5	29	29.5	0.5	Coal	
6	30.5	31	29.5	30	0.5	Coal	
7	31	31.5	30	30.5	0.5	Coal	
8	31.5	32	30.5	31	0.5	Coal	
9	32	32.5	31	31.5	0.5	Coal	
10	32.5	33	31.5	32	0.5	Shale and coal	Coal on top
	33	33.5	32	32.5	0.5	Shale, v. trace coal	No sample taken
11	33.5	34	32.5	33	0.5	Coal and shale	
12	34	34.5	33	33.5	0.5	Coal and shale	
13	34.5	35	33.5	34	0.5	Coal and shale	
14	35	35.5	34	34.5	0.5	Shale and coal	
15	35.5	36	34.5	35	0.5	Shale and coal	
16	36	36.5	35	35.5	0.5	Shale with trace coal	
17	36.5	37	35.5	36	0.5	Shale with trace coal	
18	37	37.5	36	36.5	0.5	Shale with trace coal	
	37.5	38	36.5	37	0.5	Shale w/ minor coal shows	No sample taken
19	40	40.5	39	39.5	0.5	Coal	
20	40.5	41	39.5	40	0.5	Coal	
21	41	41.5	40	40.5	0.5	Coal	
22	41.5	42	40.5	41	0.5	Coal w/ minor shale	
23	42	42.5	41	41.5	0.5	Coal w/ trace shale	
24	42.5	43	41.5	42	0.5	Coal	
25	43	43.5	42	42.5	0.5	Coal and shale	
	43.5	44			0.5	Shale	No sample taken
	44	44.5			0.5	Shale	No sample taken
	44.5	45			0.5	Shale	No sample taken
	45	45.5			0.5	Shale	No sample taken

Hole ID: CM12-06							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	45.5	46			0.5	Shale	No sample taken
26	49	50			1	Coal and shale	1m sample
27	50	50.5			0.5	Shale and coal	
	50.5	51			0.5	Shale	No sample taken
28	51	51.5			0.5	Shale and coal	
	51.5	52			0.5	Shale	No sample taken
	55					Shale	
	58					Med grained Sandstone	
	61					Fine - med grained sandstone	
	64					Med grained SS, minor shale	
	67					Med grained Sandstone	Minor coal shows @ 66m
	70					Med grained Sandstone	
	73					Med grained Sandstone	w/ coal shows
	76					Med grained Sandstone	
	79					Med grained Sandstone	
	82					Med grained Sandstone	
	85					Mg SS w/ occ orange weathering	occasional orange weathering
	88					Mg SS w/ minor coal shows	occasional orange weathering
	91					Fg, med brown sandstone	
	94					Siltstone - vfg SS, minor coal shows	
	97					Vfg, med grey sandstone	
	100					Fg, med grey sandstone	
	103					Fg, med grey sandstone	
29	104.5	105	103.5	104	0.5	Coal w/ minor shale	Small sample
30	105	105.5	104	104.5	0.5	Coal w/ minor shale	
31	105.5	106	104.5	105	0.5	Coal and shale	
32	106	106.5	105	105.5	0.5	Shale w/ trace coal	
33	106.5	107	105.5	106	0.5	Coal w/ shale	
34	107	107.5	106	106.5	0.5	Coal w/ shale	
35	107.5	108	106.5	107	0.5	Shale	
	108	108.5	107	107.5	0.5	Shale	No sample taken
	109						
	112						

Hole ID: CM12-06							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	115						
36	115.5	116	114.5	115	0.5	Coal and shale	
37	116	116.5	115	115.5	0.5	Coal and shale	
38	116.5	117	115.5	116	0.5	Coal and shale	
39	117	117.5	116	116.5	0.5	Shale w/ coal	
	117.5	118	116.5	117	0.5	Shale w/ trace coal	
	118	118.5	117	117.5	0.5	Shale	
	121					Vfg, med gy sandstone	Occasional orange weathering
	124					Vfg, med gy sandstone	Occasional orange weathering
	127					Vfg, med gy sandstone	Occasional orange weathering
	130					Vfg, med gy sandstone	Occasional orange weathering
	133					Siltstone, shale, and vfg SS	
	136					Siltstone to vfg SS	
	139		138			Siltstone to vfg SS	Coal shows
42	141.5	142			0.5	Coal	
43	142	142.5			0.5	Shale w/ minor coal	
44	142.5	143			0.5	Shale and coal	
45	143	143.5			0.5	Shale w/ minor coal	
46	143.5	144			0.5	Coal w/ shale	
47	144	144.5			0.5	Coal and shale	
48	144.5	145			0.5	Coal	
49	145	145.5			0.5	Shale and coal	
50	145.5	146			0.5	Coal w/ shale	
51	146	146.5			0.5	Carbonaceous Shale	
52	146.5	147			0.5	Shale	
	147	147.5			0.5	Shale	No sample taken
	148					Shale and fg - mg sandstone	
	151					Siltstone and fg sandstone	
53	152	152.5	154	154.5	0.5	Shale w/ minor coal	
54	152.5	153	154.5	155	0.5	Shale	
	153	153.5	155	155.5	0.5	Shale	No sample taken

Hole ID: CM12-06							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	154					Shale, siltstone, fg SS	
	157					Shale, siltstone, fg SS	
	160					vfg and fg - mg, lt and med grey SS	
	163						
55	164.5	165	166.5	167	0.5	Coal w/ minor shale	
56	165	165.5	167	167.5	0.5	Shale w/ minor coal	
57	165.5	166	167.5	168	0.5	Shale	
	166	166.5	168	168.5	0.5	Sandstone	No sample taken
	167.5		169.5			mg, hard Sandstone	Slow to drill
	169		171			mg, hard Sandstone	
	175.5		177.5			mg, hard Sandstone	TD

Hole ID: CM12-09							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	3.0					Sandstone	Casing
	4.0					fine - med. grained, med. grey sandstone	
	10.0					fine - med. grained, med. grey sandstone	
	13.0					med. - coarse grained, med. grey sandstone	
	16.0					med. - coarse grained, med. grey sandstone	
	19.0					fine - med. grained, med. grey sandstone	
	22.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	25.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	28.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	31.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	34.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	37.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	40.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	43.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	46.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	49.0					med. - coarse grained, med. grey sandstone	occasional weathered appearance
	52.0					med. grained, med. grey sandstone	
	55.0					med. grained, med. grey sandstone	
	58.0					very fine to fine grained, med. grey sandstone	
	61.0					very fine to fine grained, med. grey sandstone	
	64.0					siltstone to v. fine grained, med. grey sandstone	
	67.0					siltstone to v. fine grained, med. grey sandstone	
	70.0					siltstone to v. fine grained, med. grey sandstone	encountered groundwater
	73.0					siltstone to v. fine grained, med. grey sandstone	
	76.0					siltstone to v. fine grained, med. grey sandstone	
1	78.5	79.0			0.5	Coal w/ shale	
2	79.0	79.5			0.5	Shale w/ trace coal	
3	79.5	80.0			0.5	Shale	
	80.0	80.5			0.5	Shale	No sample taken
4	81.5	82.0			0.5	Coal	
5	82.0	82.5			0.5	Coal	
6	82.5	83.0			0.5	Coal	
7	83.0	83.5			0.5	Coal	
8	83.5	84.0			0.5	Coal and shale	
9	84.0	84.5			0.5	Shale	very fine pieces

Hole ID: CM12-09							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
10	84.5	85.0			0.5	Shale	very small pieces
11	85.0	85.5			0.5	Coal	
12	85.5	86.0			0.5	Coal	
13	86.0	86.5			0.5	Coal	
14	86.5	87.0			0.5	Coal	
15	87.0	87.5			0.5	Coal	
16	87.5	88.0			0.5	Coal	
17	88.0	88.5			0.5	Coal and shale	
18	88.5	89.0			0.5	Shale	
19	89.0	89.5			0.5	Shale	
	89.5	90.0			0.5	Shale	No sample taken
	91.0					Fine grained, med. grey sandstone	
	94.0					Fine grained, med. grey sandstone	
20	96.0	96.5			0.5	Coal w/ trace shale	
21	96.5	97.0			0.5	Coal and shale	
22	97.0	97.5			0.5	Shale	
23	97.5	98.0			0.5	Shale	
	98.5	99.0			0.5	Shale	No sample taken
	100.0					fine grained, medium grey sandstone	
	103.0					fine grained, medium grey sandstone	
	106.0					fine grained, medium grey sandstone	
	109.0					med. grey siltstone	
	112.0					fine grained, medium grey sandstone	drills very slow
	115.0					fine grained, medium grey sandstone	drills very slow
	118.0					fine grained, medium grey sandstone	drills very slow
	121.0					fine grained, medium grey sandstone	drills very slow
	124.0					med. grey siltstone, slightly carbonaceous	
24	126.0	126.5			0.5	Coal	
25	126.5	127.0			0.5	Coal	
26	127.0	127.5			0.5	Shale w/ minor coal	
27	127.5	128.0			0.5	Coal w/ trace shale	
28	128.0	128.5			0.5	Coal	
29	128.5	129.0			0.5	Coal	

Hole ID: CM12-09							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
30	129.0	129.5			0.5	Coal	
31	129.5	130.0			0.5	Coal	
32	130.0	130.5			0.5	Coal	
33	130.5	131.0			0.5	Coal	
34	131.0	131.5			0.5	Coal	
35	131.5	132.0			0.5	Coal	
36	132.0	132.5			0.5	Coal	
37	132.5	133.0			0.5	Coal	
38	133.0	133.5			0.5	Coal w/ minor shale	
39	133.5	134.0			0.5	Coal	
40	134.0	134.5			0.5	Coal and shale	
41	134.5	135.0			0.5	Shale w/ minor coal	
42	135.0	135.5			0.5	Shale, slightly carbonaceous	
	135.5	136.0			0.5	Shale	No sample taken
	138.0					Carbonaceous shale	
43	138.5	139.0			0.5	Carbonaceous shale and coal	
44	139.0	139.5			0.5	Coal	
45	139.5	140.0			0.5	Coal and shale	80% coal is on top
46	140.0	140.5			0.5	Shale and sandstone	
47	140.5	141.0			0.5	Sandstone	
	141.0	141.5			0.5	Sandstone	No sample taken
	145.0					Sandstone w/ minor shale	
	148.0					Shale	
48	151.0	151.5			0.5	Coal w/ minor shale	
49	151.5	152.0			0.5	Coal	
50	152.0	152.5			0.5	Coal	
51	152.5	153.0			0.5	Shale w/ trace coal	
52	153.0	153.5			0.5	Sandstone	
	153.5	154.0			0.5	Sandstone	No sample taken
					0.0		
53	158.0	158.5			0.5	Coal and carbonaceous shale	
54	158.5	159.0			0.5	Carbonaceous shale	
55	159.5	159.5			0.5	Shale	

Hole ID: CM12-10							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	10.0					Carbonaceous shale	
1	12.5	13.0				Coal w/ shale	
2	13.0	13.5				Coal w/ trace shale	
3	13.5	14.0				Coal	
4	14.0	14.5				Coal	
5	14.5	15.0				Coal	
6	15.0	15.5				Coal	
7	15.5	16.0				Coal w/ trace shale	
8	16.0	16.5				Coal w/ trace shale	
9	16.5	17.0				Coal w/ trace shale	
10	17.0	17.5				Coal	
11	17.5	18.0				Coal	
12	18.0	18.5				Coal	
13	18.5	19.0				Coal	
14	19.0	19.5				Coal	
15	19.5	20.0				Coal	
16	20.0	20.5				Coal	
17	20.5	21.0				Coal	
18	21.0	21.5				Coal	
19	21.5	22.0				Coal	
20	22.0	22.5				Coal	Smalll sample
21	22.5	23.0				Coal	
22	23.0	23.5				Coal	
23	23.5	24.0				Coal w/ trace shale	
24	24.0	24.5				Coal and shale	
25	24.5	25.0				Shale	
26	25.0	25.5				Shale	
	25.5	26.0				Shale	No sample taken
27	29.5	30.0				Shale w/ trace coal	
28	30.0	30.5				Coal w/ trace shale	
29	30.5	31.0				Coal and shale	
30	31.0	31.5				Coal and shale	
31	31.5	32.0				Shale	
32	32.0	32.5				Shale	
	32.5	33.0				Shale	No sample taken

Hole ID: CM12-10							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	34.0					Siltstone, carbonaceous	drills very eaisly
	37.0					Siltstone, carbonaceous	
	40.0					Siltstone, carbonaceous	
33	42.0	42.5				Coal	
34	42.5	43.0				Coal w/ trace shale	
35	43.0	43.5				Coal	
36	43.5	44.0				Coal	
37	44.0	44.5				Shale and coal	
38	44.5	45.0				Shale	
39	45.0	45.5				Shale	
	45.5	46.0				Shale	No sample taken
	49.0					fine grained, medium grey sandstone	
	50.5					as above, but starts to get carbonaceous	
40	51.5	52.0				Coal	
41	52.0	52.5				Shale w/ coal	
42	52.5	53.0				Shale	
43	53.0	53.5				Shale	
	54.0					Carbonaceous siltstone w/ possible coal stringers	
	57.0					fine grained, medium grey sandstone	
	58.0					fine grained, medium grey sandstone	
	61.0					very fine - fine grained, medium grey sandstone	
	64.0					med. - coarse grained, med. gry - brn sandstone	
	67.0					med. - coarse grained, med. gry - brn sandstone	
	70.0					med. - coarse grained, med. gry - brn sandstone	
	73.0					med. - coarse grained, med. gry - brn sandstone	
	76.0					med. - coarse grained, med. gry - brn sandstone	
	79.0					siltstone to very fine grained, med. grey sandstone	
	82.0					siltstone to very fine grained, med. grey sandstone	
	85.0					siltstone to very fine grained, med. grey sandstone	
	88.0					siltstone to very fine grained, med. grey sandstone	
	91.0					siltstone to very fine grained, med. grey sandstone	
	94.0					siltstone to very fine grained, med. grey sandstone	

Hole ID: CM12-10							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	97.0					siltstone to very fine grained, med. grey sandstone	POOH to check bit
44	98.5	99.0				Coal w/ trace shale	
45	99.0	99.5				Coal	
46	99.5	100.0				Coal	
47	100.0	100.5				Coal	
48	100.5	101.0				Coal w/ shale	
49	101.0	101.5				Shale and coal	
50	101.5	102.0				Coal	
51	102.0	102.5				Coal	
52	102.5	103.0				Coal	
53	103.0	103.5				Coal	
54	103.5	104.0				Coal w/ minor shale	
55	104.0	104.5				Shale w/ coal	
56	104.5	105.0				Shale and coal	
57	105.0	105.5				Shale w/ trace coal	
58	105.5	106.0				Shale	
59	106.0	106.5				Shale w/ minor coal	
60	108.5	109.0				Shale w/ coal	
	109.0	109.5				Shale	No sample taken
	109.5	110.0				Shale	No sample taken
61	110.0	110.5				Coal	
62	110.5	111.0				Coal	
63	111.0	111.5				Shale w/ trace coal	
64	111.5	112.0				Coal	
65	112.0	112.5				Shale w/ trace coal	
66	112.5	113.0				Shale	
	113.0	113.5				Shale	No sample taken
67	113.5	114.0				Coal	
68	114.0	114.5				Shale w/ minor coal	
69	114.5	115.0				Shale	
	115.0	115.5				Shale and dark grey fine grained sandstone	No sample taken
	118.0					Shale	
	121.0					fine grained, light grey sandstone	
	124.0					fine - med. grained, light grey sandstone	

Hole ID: CM12-10							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	126.0					Shale	
	128.0					fine - med. grained, light grey sandstone	
	130.0					Shale	
	133.0					Shale w/ slight coal shows	
70	133.2	133.5				Coal	
71	133.5	134.0				Coal w/ carbonaceous shale	Coal is dominant
72	134.0	134.5				Shale	
73	134.5	135.0				Shale	
	135.0	135.5				Shale	No sample taken
	135.5	136.0				Shale	No sample taken
74	136.5	137.0				Carbonaceous shale and coal	
75	137.0	137.5				Coal	
76	137.5	138.0				Shale w/ coal	
77	138.0	138.5				Shale and coal	Shale on top
78	138.5	139.0				Coal	
79	139.0	139.5				Coal	
80	139.5	140.0				Coal	
81	140.0	140.5				Coal	
82	140.5	141.0				Coal	
83	141.0	141.5				Coal	
84	141.5	142.0				Coal	
85	142.0	142.5				Coal	
86	142.5	143.0				Coal w/ minor shale	
87	143.0	143.5				Coal	
88	143.5	144.0				Coal	
89	144.0	144.5				Coal w/ minor carbonaceous shale	
90	144.5	145.0				Carbonaceous shale and coal	
91	145.0	145.5				Carbonaceous shale w/ minor coal	
92	145.5	146.0				Carbonaceous shale	
	146.0	146.5				Carbonaceous shale	No sample taken
	148.0					Shale	
93	149.5	150.0				Coal	
94	150.0	150.5				Coal	
95	150.5	151.0				Coal	

Hole ID: CM12-10							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
96	151.0	151.5				Shale	
97	151.5	152.0				Shale	
	152.0	152.5				Shale	No sample taken
	154.0					Siltstone to very fine grained sandstone	
	157.0					fine grained sandstone	
	160.0					Shale	
98	162.5	163.0				Carbonaceous shale and coal	
99	163.0	163.5				Coal	
100	163.5	164.0				Coal	
101	164.0	164.5				Shale and coal	Coal on top
102	164.5	165.0				Shale	
	165.0	165.5				Shale	No sample taken
103	169.0	169.5				Coal	
104	169.5	170.0				Shale w/ minor coal	
105	170.0	170.5				Shale	

Hole ID: CM12-16							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	5	5.5				Coal	Dry sample
2	5.5	6			0.5	Coal	Dry sample
3	6	6.5			0.5	Coal	Dry sample
4	6.5	7			0.5	Coal	Dry sample
5	7	7.5			0.5	Coal	Dry sample
6	7.5	8			0.5	Coal	Dry sample
7	8	8.5			0.5	Coal	Dry sample
8	8.5	9			0.5	Coal	Dry sample
9	9	9.5			0.5	Coal	Dry sample
10	9.5	10			0.5	Coal w/ shale	Dry sample
11	10	10.5			0.5	Shale w/ minor coal	Mostly dry
12	10.5	11			0.5	Shale w/ trace coal	Dry sample
13	11	11.5			0.5	Shale w/ trace coal	Dry sample
14	11.5	12			0.5	Shale	
15	12	12.5			0.5	Shale	No sample taken
	12.5	13			0.5		
	16					Siltstone and fg sandstone	
	19					Siltstone and fg sandstone	
	22					Siltstone and fg sandstone	
16	24	24.5			0.5	Shale w/ minor coal	
17	24.5	25			0.5	Coal	
18	25	25.5			0.5	Coal	
19	25.5	26			0.5	Coal	Dry sample
20	26	26.5			0.5	Shale	Dry sample
21	26.5	27			0.5	Shale w/ minor coal	Dry sample
22	27	27.5			0.5	Shale w/ trace coal	Dry sample
23	27.5	28			0.5	Shale	Dry sample
	28	28.5			0.5	Shale	No sample taken
	34						
24	35.5	36			0.5	Coal w/ trace shale	Dry sample
25	36	36.5			0.5	Coal w/ trace shale	Dry sample
26	36.5	37			0.5	Coal w/ trace shale	Dry sample
27	37	37.5			0.5	Coal w/ trace shale	Dry sample

Hole ID: CM12-16							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
28	37.5	38			0.5	Coal	Dry sample
29	38	38.5			0.5	Coal	Dry sample
30	38.5	39			0.5	Coal w/ minor shale	Dry sample
31	39	39.5			0.5	Shale	Dry sample
32	39.5	40			0.5	Coal w/ minor shale	Dry sample
33	40	40.5			0.5	Shale w/ trace coal	Dry sample
34	40.5	41			0.5	Shale w/ trace coal	Dry sample
35	41	41.5			0.5	Coal	Dry sample
36	41.5	42			0.5	Coal	Dry sample
37	42	42.5			0.5	Coal	Dry sample
38	42.5	43			0.5	Coal	Dry sample
39	43	43.5			0.5	Coal	Dry sample
40	43.5	44			0.5	Coal	Dry sample
41	44	44.5			0.5	Coal	Dry sample
42	44.5	45			0.5	Coal w/ minor shale	
43	45	45.5			0.5	Coal w/ minor shale	
44	45.5	46			0.5	Coal w/ minor shale	
45	46	46.5			0.5	Shale w/ trace coal	Dry sample
46	46.5	47			0.5	Shale	
47	47	47.5			0.5	Shale and coal	Dry sample
48	47.5	48			0.5	Shale and coal	Dry sample
49	48	48.5			0.5	Shale	
	48.5	49			0.5	Shale	No sample taken
	52					Shale, siltstone, vfg sandstone	
	55					Siltstone and vfg sandstone	
	58					Siltstone and vfg sandstone	
50	60.5	61			0.5	Shale w/ trace coal	
51	61	61.5			0.5	Shale w/ coal	
52	61.5	62			0.5	Shale	
	62	62.5			0.5	Shale	No sample taken
	63					mg, hard Sandstone	
	64					mg, hard Sandstone	
	67					mg, hard Sandstone	
	70					mg, hard Sandstone	

Hole ID: CM12-16							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	73					mg, hard Sandstone	
	76					mg, hard Sandstone	
53	77	77.5			0.5	Carbonaceous shale w/ minor coal	
54	77.5	78			0.5	Shale and coal	
55	78	78.5			0.5	Coal w/ minor shale	
56	78.5	79			0.5	Shale w/ trace coal	
	82					fg-mg Sandstone	Hard

Hole ID: CM12-17							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	7.0					sandstone	
	10.0					sandstone	
	13.0					shale and siltstone	orange weathering common
	16.0					sandstone, fg	
	19.0					sandstone, fg	
	22.0					sandstone, fg	
	25.0					sandstone, fg	
	28.0					sandstone, fg	
	31.0					sandstone, fg, minor coal shows	
	34.0					sandstone, fg, minor coal shows	
	37.0					sandstone, fg w/ minor shale	
	40.0					shale w/ minor sandstone	
	43.0					shale	
	46.0					shale	
	52.0					shale	
	55.0					shale	
1	55.5	56.0			0.5	carbonaceous shale and coal	carbonaceous shale on top
2	56.0	56.5			0.5	coal	
3	56.5	57.0			0.5	coal	
4	57.0	57.5			0.5	coal	
5	57.5	58.0			0.5	coal	
	58.0	58.5			0.5	shale, slightly carbonaceous	no sample taken
	58.5	59.0			0.5	shale, slightly carbonaceous	no sample taken
	61.0					shale	
	64.0					shale	
	67.0					shale	
	70.0					shale	
7	71.0	71.5			0.5	coal	very small sample
8	71.5	72.0			0.5	coal and carbonaceous shale	
9	72.0	72.5			0.5	coal and carbonaceous shale	
10	72.5	73.0			0.5	carbonacous shale	
11	73.0	73.5			0.5	coal	
12	73.5	74.0			0.5	carbonacoue shale w/ minor coal	
13	74.0	74.5			0.5	carbonaceous shale w/ coal	

Hole ID: CM12-17							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
14	74.5	75.0			0.5	carbonaceous shale w/ coal	
15	75.0	75.5			0.5	carbonaceous shale and coal	
16	75.5	76.0			0.5	carbonaceous shale w/ minor coal	
17	76.0	76.5			0.5	carbonaceous shale and coal	
18	76.5	77.0			0.5	carbonaceous shale w/ trace coal	
	77.0	77.5			0.5	shale	no sample taken
19	80.0	80.5			0.5	coal w/ minor carbonaceous shale	shale on top
20	80.5	81.0			0.5	coal	
21	81.0	81.5			0.5	coal	
22	81.5	82.0			0.5	carbonaceous shale and coal	
	82.0	82.5			0.5	shale	no sample taken
23	85.0	85.5			0.5	coal w/ minor carbonaceous shale	shale at top
24	85.5	86.0			0.5	carbonaceous shale w/ minor coal	
25	86.0	86.5			0.5	coal	
26	86.5	87.0			0.5	coal	
27	87.0	87.5			0.5	carbonaceous shale w/ trace coal	
28	87.5	88.0			0.5	coal	
29	88.0	88.5			0.5	carbonaceous shale w/ trace coal	
30	88.5	89.0			0.5	coal	
31	89.0	89.5			0.5	coal	
32	89.5	90.0			0.5	coal	
33	90.0	90.5			0.5	coal and carbonaceous shale	
34	90.5	91.0			0.5	coal and carbonaceous shale	
35	91.0	91.5			0.5	carbonaceous shale	
36	91.5	92.0			0.5	carbonaceous shale	
37	92.0	92.5			0.5	carbonaceous shale	
38	92.5	93.0			0.5	coal	
39	93.0	93.5			0.5	coal	
40	93.5	94.0			0.5	coal	
41	94.0	94.5			0.5	coal	
42	94.5	95.0			0.5	carbonaceous shale and coal	
43	95.0	95.5			0.5	carbonaceous shale and coal	
	95.5	96.0			0.5	shale	no sample taken
44	99.5	100.0			0.5	coal w/ carbonaceous shale	
45	100.0	100.5			0.5	shale w/ trace coal	

Hole ID: CM12-17							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
46	100.5	101.0			0.5	siltstone and sandstone	
47	101.0	101.5			0.5	siltstone and sandstone	
	103.0					sandstone and siltstone	
	106.0					shale	
	109.0					sandstone, vfg-fg	
48	109.5	110.0			0.5	coal	
49	110.0	110.5			0.5	coal	
50	110.5	111.0			0.5	siltstone, trace coal	
51	111.0	111.5			0.5	siltstone	
	112.0					sandstone, fg, hard	hard, drills slow
	115.0					SS, fg, hard, trace coal shows	hard, drills slow
	118.0					sandstone, fg, hard	hard, drills slow
	121.0					sandstone, mg	hard, drills slow
	124.0					sandstone, mg	hard, drills slow
52	125.5	126.0			0.5	coal	powdery (dry sample)
53	126.0	126.5			0.5	coal w/ sandstone	
54	126.5	127.0			0.5	coal w/ minor sandstone	
	127.0	127.5			0.5	sandstone, mg	hard, drills slow
	130.0					sandstone, mg	hard, drills slow
	133.0					sandstone, mg	hard, drills slow
	136.0					sandstone, mg	hard, drills slow
	139.0					sandstone, mg	hard, drills slow
	142.0					sandstone, mg, slightly silty	hard, drills slow
	145.0					sandstone, mg, slightly silty	hard, drills slow
	148.0					sandstone, mg, slightly silty	hard, drills slow

Hole ID: CM12-18							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	4						
	10						
	10.5					Coal stringer	very small, no sample
	13					Carbonaceous shale and Shale	
1	14	14.5			0.5	Carbonaceous shale w/ trace coal (blk)	
2	14.5	15.0			0.5	Carbonaceous shale w/ trace coal (blk)	
3	15.0	15.5			0.5	Carbonaceous shale w/ trace coal (blk)	
4	15.5	16.0			0.5	Carbonaceous shale (blk)	
5	16.0	16.5			0.5	Shale (brn)	
	19.0					Shale and Sandstone	
	22.0					Sandstone	
	25.0					Sandstone	
	28.0					Sandstone	
	31.0					Sandstone	
	34.0					Sandstone	
	37.0					Sandstone	
	40.0					Sandstone w/trace carb shale	Coal Stinger
	43.0					Sandstone	
	46.0					Sandstone	
6	46.5	47.0			0.5	Coal and Shale	
7	47.0	47.5			0.5	Coal w/minor Carbonaceous shale	
8	47.5	48.0			0.5	Coal w/shale	
9	48.0	48.5			0.5	Coal w/shale	
10	48.5	49.0			0.5	Carbonaceous shale (blk)	
11	49.0	49.5			0.5	Shale (brn)	
12	49.5	50.0			0.5	Shale (brn)	
13	50.5	51.0			0.5	Shale w/minor coal (blk)	
14	51.0	51.5			0.5	Shale (brn)	
15	51.5	52.0			0.5	Shale (brn)	
	55.0					Sandstone (light yellow brown)	Drills fast
	58.0					Sandstone (med gray, coarse grained)	
	61.0					Sandstone (med gray, coarse grained)	
	64.0					Sandstone (med gray, coarse grained)	

Hole ID: CM12-18							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	67.0					Sandstone (med gray, coarse grained)	
	70.0					Sandstone (gray, fine to med grained)	
	73.0					Sandstone (gray, fine to med grained)	
	76.0					Sandstone (gray, fine to med grained)	
	79.0					Sandstone (gray, fine to med grained)	
	82.0					Sandstone (gray, fine to med grained)	
	85.0					Sandstone (gray, fine to med grained)	
	88.0					Sandstone (med-coarse grained)	
	91.0					Sandstone (med-coarse grained)	
	94.0					Siltstone to very fine grained Sandstone	
	97.0					Sandstone (fine grained)	
	100.0					Sandstone (fine grained)	
	103.0					Sandstone (fine grained)	
	106.0					Shale	
	109.0					Sandstone (med-coarse grained)	
	112.0					Sandstone (med-coarse grained)	
	115.0					Siltstone	
16	117.5	118.0			0.5	Carbonaceous shale w/coal (blk)	
17	118.0	118.5			0.5	Carbonaceous shale w/coal (blk)	
18	118.5	119.0			0.5	Coal	
19	119.0	119.5			0.5	Shale w/coal	
20	119.5	120.0			0.5	Shale	
21	120.0	120.5			0.5	Shale	
	121.0					Siltstone to very fine grained Sandstone	
	124.0					Siltstone to very fine grained Sandstone	
	129.0					Carbonaceous shale	
22	129.5	130.0			0.5	Carbonaceous shale and Coal	
	130.0	130.5			0.5	Shale (minor coal shows)	No sample taken
	130.5	131.0			0.5	Shale	No sample taken
	136.0					Carbonaceous shale w/minor coal	No sample taken
	138.0					Carbonaceous shale w/minor coal	No sample taken

Hole ID: CM12-18							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
23	138.0	138.5			0.5	Carbonaceous shale and Coal	
24	138.5	139.0			0.5	Carbonaceous shale and Coal	
25	139.0	139.5			0.5	Carbonaceous shale and minor Coal	
26	139.5	140.0			0.5	Shale	
	142.0					Lt gry Sandstone	
	145.0					Shale and Siltstone	
	148.0					Siltstone and Sandstone	
	151.0					Sandstone	
	154.0					Sandstone	
	156.0					Shale w/minor coal shows	No sample taken
	160.0					Sandstone (med grained)	
	162.0					Sandstone w/coal shows	
	166.0					Sandstone (med grained)	
	168.0					Sandstone w/coal shows	
27	169.0	169.5			0.5	Sandstone, Carbonaceous shale, w/minor Coal	Sandstone on top
28	169.5	170.0			0.5	Shale	
	170.0	170.5				Shale	No sample taken
	172.0					Shale	
	175.0					Sandstone (med grained)	
29	177.0	177.5			0.5	Coal	
30	177.5	178.0			0.5	Coal	
31	178.0	178.5			0.5	Coal	
32	178.5	179.0			0.5	Coal	
33	179.0	179.5			0.5	Coal	
34	179.5	180.0			0.5	Shale w/coal	
35	180.0	180.5			0.5	Shale	
	180.5	186.0			5.5	Shale	No Sample taken
	186.0					Shale	
	190.0					Shale	
	192.0					Shale w/Coal shows	
36	192.2	192.5			0.3	Coal w/ minor Carb Shale	
37	192.5	193.0			0.5	Coal w/ minor Carb Shale	

Hole ID: CM12-18							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
38	193.0	193.5			0.5	Shale w/Coal	
39	193.5	194.0			0.5	Coal	
40	194.0	194.5			0.5	Shale w/ minor coal	
41	194.5	195.0			0.5	Shale	
	199.0					Shale	
42	201.5	202.0			0.5	Coal w/minor shale	Shale on top
43	202.0	202.5			0.5	Mixed Coal and shale	
44	202.5	203.0			0.5	Shale w/Coal	
	203.0	203.5			0.5	Shale	No Sample taken
					0		
45	205.5	206.0			0.5	Shale w/Coal	
	206.0	206.5			0.5	Shale	No Sample taken
46	206.5	207.0			0.5	Coal and Shale	Shale on top
47	207.0	207.5			0.5	Coal	
48	207.5	208.0			0.5	Coal	
49	208.0	208.5			0.5	Mixed Coal and Shale	
50	208.5	209.0			0.5	Shale trace Coal	
51	209.0	209.5			0.5	Mixed Coal and Shale	
52	209.5	210.0			0.5	Coal	
53	210.0	210.5			0.5	Coal	
54	210.5	211.0			0.5	Coal	
55	211.0	211.5			0.5	Coal w/shale	
56	211.5	212.0			0.5	Shale	
	212.0	212.5			0.5	Shale	No Sample taken
	212.5	213.0			0.5	Shale	No Sample taken
	219.0					Shale	
	221.0					Siltstone	
57	222.0	222.5			0.5	Coal	
58	222.5	223.0			0.5	Shale w/minor Coal	
59	223.0	223.5			0.5	Shale	
	223.5	224.0			0.5	Shale	No Sample taken
	224.0	224.5			0.5	Shale	

Hole ID: CM12-19							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
1	7.5	8.0			0.5	coal	
2	8.0	8.5			0.5	sandstone w/ minor coal	very small sample
	8.5	9.0			0.5	sandstone	no sample taken
3	9.0	9.5			0.5	sandstone w/ minor coal	
	9.5	10.0			0.5	sandstone	no sample taken
	10.5	11.0			0.5	sandstone w/ coal shows	no sample taken
	12.0	12.5			0.5	SS, mg w/ minor coal shows	no sample taken - coal v. fine grained (stringers)
		16.0				Ss, mg w/ abundant coal shows	
		19.0				Ss, mg w/ abundant coal shows	~20% coal in fines
		22.0				Ss, mg w/ abundant coal shows	~10% coal in fines
4	23.5	24.0			0.5	carb. Shale, shale and coal	very small sample
	24.0	24.5			0.5	shale	no sample taken
		28.0				sandstone, mg, coal shows	
		31.0				sandstone, mg, coal shows	
		34.0				sandstone, mg, coal shows	
		37.0				sandstone, mg-cg w/ coal shows	
		40.0				sandstone, mg-cg w/ coal shows	
		43.0				sandstone, mg-cg w/ coal shows	
		46.0				Ss, mg-cg w/ minor coal shows	
		49.0				Ss, mg w/ abundant coal shows	
		52.0				Ss, mg w/ abundant coal shows	
		55.0				shale	
		58.0				shale	
		61.0				sandstone, fg and shale	
		64.0				Ss, fg-mg	orange weathering common
		67.0				Ss, fg	
		70.0				Ss, vfg	
		73.0				Ss, vfg to siltstone	
		76.0				Ss, fg-mg	
5	77.5	78.0			0.5	carb shale and minor coal	

Hole ID: CM12-19							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
6	78.0	78.5			0.5	coal and carb shale	
7	78.5	79.0			0.5	coal w/ minor carb shale	
8	79.0	79.5			0.5	carb shale w/ coal	
9	79.5	80.0			0.5	carb shale w/ trace coal	
10	80.0	80.5			0.5	carb shale w/ trace coal	
11	80.5	81.0			0.5	carb shale and coal	
12	81.0	81.5			0.5	carb shale w/ trace coal	
	81.5	82.0			0.5	carb shale	no sample taken
	82.0	82.5			0.5	carb shale and shale	no sample taken
		85.0				shale w/ minor siltstone	
		88.0				shale w/ minor siltstone	
		91.0				Ss	
		94.0				Ss, mg-cg, lgt-md gy	
		97.0				Ss, mg-cg, lt-md gy, trace coal shows	
		100.0				Ss, mg-cg, med gy	
		103.0				Ss, mg-cg, med gy	
		106.0				Ss, mg-cg, coal shows 106-107m	
		109.0				siltstone, med-dk gy	
		112.0				siltstone, med-dk gy	
13	112.5	113.0			0.5	coal	
14	113.0	113.5			0.5	coal	
15	113.5	114.0			0.5	coal	
16	114.0	114.5			0.5	coal	
17	114.5	115.0			0.5	coal	
18	115.0	115.5			0.5	coal w/ siltstone	
19	115.5	116.0			0.5	siltstone	
	116.0	116.5			0.5	siltstone	no sample taken
		118.0				siltstone	
		121.0				siltstone w/ trace coal shows	
		124.0				siltstone w/ trace coal shows	
20	124.5	125.0			0.5	siltstone, minor coal shows	
	125.0	125.5			0.5	silstone	no sample taken

Hole ID: CM12-19							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
		127.0				siltstone and shale	
		130.0				siltstone and shale, trace calcite?	
21	132.0	132.5			0.5	coal and shale	
22	132.5	133.0			0.5	shale	
	133.0	133.5			0.5	shale	no sample taken
		136.0				shale	
		139.0				shale, trace coal shows	
23	139.0	139.5			0.5	coal and shale	
24	139.5	140.0			0.5	coal w/ shale	
25	140.0	140.5			0.5	coal	
26	140.5	141.0			0.5	coal and shale	
27	141.0	141.5			0.5	coal w/ shale	
28	141.5	142.0			0.5	coal w/ shale	
29	142.0	142.5			0.5	coal and shale	
30	142.5	143.0			0.5	shale w/ trace coal	
31	143.0	143.5			0.5	shale	
	143.5	144.0			0.5	shale	no sample taken
		145.0				sandstone, fg	
		148.0				sandstone, fg	
		151.0				Ss, mg-cg, med gy	
		154.0				Ss, mg-cg, med gy	
32	156.5	157.0			0.5	shale w/ trace coal	
	157.0	157.5			0.5	shale	no sample taken
		160.0				siltstone, med gy	
		163.0				siltstone, med gy	
33	164.5	165.0			0.5	coal w/ trace siltstone	
34	165.0	165.5			0.5	coal w/ siltstone (coal at top)	

Hole ID: CM12-19							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
35	165.5	166.0			0.5	siltstone w/ trace coal, med gy	
36	166.0	166.5			0.5	siltstone, med gy	
		169.0				siltstone	
		172.0				siltstone	
		175.0				sandstone, mg-cg, med brn gy	drills very slow
		178.0				sandstone, mg-cg, med brn gy	
		181.0				sandstone, mg-cg, med brn gy	
37		182.0			182.0	coal	
38		182.5			182.5	coal, trace Ss (at base)	

Hole ID: CM12-21							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
No coal encountered, hole not sampled, no description avaliable.							

Hole ID: CM12-24							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	6	9				Sandstone, weathered coal @ 7m	
	9	12				Sandstone	
	12	15				Sandstone and siltstone	
	15	18				Sandstone	
	18	21				Sandstone	
	21	24				Med. gy v. silty Ss w/ com. tan silt	Commonly powdery out of cyclone
	28					Med. gy v. silty Ss w/ com. tan silt	
	31					Med. gy v. silty Ss w/ com. tan silt	
	34					Med. gy v. silty Ss w/ com. tan silt	
	37					Med. gy v. silty Ss w/ com. tan silt	
	40					Very silty sandstone	
	43					Very silty sandstone	
	46					Very silty sandstone	
	49					vfg - fg, med brn - gy silty Ss	
	52					vfg - fg, med brn - gy silty Ss	
	55					vfg - fg, v. silty Ss	Breaks fairly eaisly
	58					lt brn/gy Silty Ss and siltstone	Powdery out of cyclone
	61					lt brn/gy Silty Ss and siltstone	
	64					lt brn/gy Silty Ss and siltstone	
	67					Silt and silty sandstone	Powder w/ chips of Ss
	70					lt brn/gy silty Ss	
	73					Siltstone w/occ.vfg Ss, med-dk brn	
	76						
	79					Med. brn to gy Siltstone	Powder
	82					Med. brn to gy Siltstone	
	85					Med. brn to gy Siltstone	
	88					Med. brn to gy Siltstone	
	91					Med. brn to gy Siltstone	
	94					Med. brn to gy Siltstone	
	97					Med. brn to gy Siltstone	
	112					Light grey Siltstone	Powder
	118					Light grey Siltstone	Very soft drilling
	121					Light grey Siltstone	Very soft drilling
	124					Light grey Siltstone	Very soft drilling
	130					Light grey Siltstone	Very soft drilling

Hole ID: CM12-24							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	136					Light grey Siltstone to vfg Ss	
	142					Light grey Siltstone to vfg Ss	
	148					Light grey Siltstone to vfg Ss	
	154					Light grey Siltstone to vfg Ss	Common Qtz (calcite?) filled fractures/veins
	157					Light grey Siltstone to vfg Ss	Common Qtz (calcite?) filled fractures/veins

Hole ID: CM12-25							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	16					Fine grained sandstone	
	19					Fine grained sandstone	
	22					Med. brn, fine grained sandstone	
	25					Med. brn, fine grained sandstone	
	28					fg - mg, med. brn, sandstone	
	31					fg - mg, med. brn, sandstone	
	34					Mg - cg brown sandstone	Commonly weathered
	37					Mg - cg brown sandstone	
	40					Mg - cg brown sandstone	
	43					Mg - cg brown sandstone	
	46					Fine grained sandstone	
	49					Fine grained med. brn sandstone	
	52					Fine grained med. brn sandstone	
1	52.5	53			0.5	Coal and shale	
2	53	53.5			0.5	Coal	
3	53.5	54			0.5	Coal	
4	54	54.5			0.5	Coal	
5	54.5	55			0.5	Shale w/ trace coal	
6	55	55.5			0.5	Shale	
	58					Fine grained sandstone	
	61					Fine grained sandstone	
	64					Fine grained sandstone	
	67					Fine grained sandstone	
	70					Fine grained sandstone	
	73					Fine grained sandstone	
	76					Fine grained sandstone	
	79					siltstone to vfg sandstone	
	82					siltstone to vfg sandstone	
	85					siltstone and sandstone	
	88					Sandstone	
	91					Sandstone	
	94					Sandstone	
	97					Siltstone	
	100					Siltstone and carb. shale	
	103					Siltstone and shale	
	106					Siltstone w/ vfg sandstone	Abnt qtz (poSsibly CaCo3) veins

Hole ID: CM12-25							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	109					Shale	
	112					Shale and siltstone	Minor qtz (poSsibly CaCo3) veins
	115					Shale and siltstone	
	118					fg - mg light grey sandstone	
	121					med. grained sandstone and shale	
	124					med. grained sandstone and shale	
	127					med. grained sandstone and shale	
	130					med. grained sandstone and shale	
	133					med. grained sandstone and shale	

Hole ID: CM12-28							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	3					Fine grained sandstone	
	7					Fine grained sandstone	
	10					Fine grained sandstone	
	13					Fine grained sandstone	
	16					Fine grained sandstone	
	19					Fine grained sandstone	
	22					Med. - coarse grained sandstone	
	25					Med. - coarse grained sandstone	
	28					Med. - coarse grained sandstone	
	31					Fine grained sandstone	
	34					Fine grained sandstone	
	37					Fine grained sandstone	
	40					Sltst and v. fg Ss, trace carb. shale	
	43					Sltst and v. fg Ss, trace carb. shale	
1	44	44.5			0.5	Coal	
2	44.5	45			0.5	Coal	Small sample
3	45	45.5			0.5	Coal w/ trace shale	Small sample
4	45.5	46			0.5	Coal and shale	Small sample
5	46	46.5			0.5	Shale and sandstone	
	46.5	47			0.5	Sandstone	No sample taken
	49					Fine - med. grained brn Sandstone	
	52					Fine - med. grained brn Sandstone	
	55					Fine - med. grained brn Sandstone	
	58					Fine - med. grained brn Sandstone	
	61					Fine - med. grained brn Sandstone	
	64					Fine - med. grained brn Sandstone	
	67					Fg - mg brn Ss, trace carb stringers	
	70					Fg - mg brn Ss, getting carbonaceous	
6	72	72.5			0.5	Coal and shale	
7	72.5	73			0.5	Shale w/ trace coal	
	73	73.5			0.5	Shale	No sample taken
	76					Shale & Ss, common carb. stringers	
	79					fg-mg Ss, occ. weathered orange/brn	

Hole ID: CM12-28							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
8	80	80.5			0.5	Shale w/ coal	
9	80.5	81			0.5	Shale and coal	
10	81	81.5			0.5	Shale	
	81.5	82			0.5	Shale	No sample taken
	85					Siltstone w/ v. fg Sandstone	
	88					Siltstone w/ v. fg Sandstone	
	91					Sandstone	
11	93.5	94			0.5	Coal and shale	
12	94	94.5			0.5	Coal	
13	94.5	95			0.5	Coal	
14	95	95.5			0.5	Coal	
15	95.5	96			0.5	Coal	
16	96	96.5			0.5	Coal	
17	96.5	97			0.5	Coal	
18	97	97.5			0.5	Coal	
19	97.5	98			0.5	Coal	Small sample
20	98	98.5			0.5	Coal	
21	98.5	99			0.5	Coal w/ minor shale	
22	99	99.5			0.5	Coal	
23	99.5	100			0.5	Coal	
24	100	100.5			0.5	Coal	
25	100.5	101			0.5	Coal w/ minor shale	
26	101	101.5			0.5	Shale w/ minor coal	
27	101.5	102			0.5	Shale	
	102	102.5			0.5	Shale	No sample taken
	106					Shale	
28	108	108.5			0.5	Coal	
29	108.5	109			0.5	Coal	
30	109	109.5			0.5	Coal	
31	109.5	110			0.5	Coal	
32	110	110.5			0.5	Coal and shale	
33	110.5	111			0.5	Shale	

Hole ID: CM12-28							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	111	111.5			0.5	Shale	No sample taken
34	111.5	112			0.5	Coal w/ shale	
35	112	112.5			0.5	Shale	
	112.5	113			0.5	Shale	No sample taken
	115	115.5				Shale w/ minor sandstone	
	116.5	117			0.5	Shale and Ss w/ trace coal shows	
	118					Shale	
	122					Med. Grained sandstone	
36	123.5	124				Coal w/ minor shale	
37	124	124.5				Shale w/ minor coal	
	124.5	125				Shale	No sample taken
	127					Sandstone w/ trace coal shows	
	130					Med. grained sandstone	
	133					Sandstone	
	136					Sandstone	

Hole ID: CM12-29							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	19					Fine grained, med brn sandstone	*Hole abandoned early at 64m due to collapsing tight hole starting @ 55m
	22					Sandstone and siltstone	
	25					Med grey - brown siltstone	
	28					Fine grained, med brn sandstone	
	31					Fine grained, med brn sandstone	
	34					Medium grey siltstone	
	37					Medium grey siltstone	
	40					Medium grey siltstone	
1	41.5	42			0.5	Coal and siltstone	Dry sample
2	42	42.5			0.5	Siltstone w/ coal	Dry sample
3	42.5	43			0.5	Siltstone and Ss, trace coal	
4	43	43.5			0.5	Siltstone	
	46					Siltstone	
	49					Siltstone	
5	49.5	50			0.5	Coal	Dry sample
6	50	50.5			0.5	Coal	Dry sample
7	50.5	51			0.5	Coal	Dry sample
8	51	51.5			0.5	Coal	Dry sample
9	51.5	52			0.5	Siltstone w/ trace coal	
10	52	52.5			0.5	Siltstone	
	55					Sandstone	
	58					Fg, med grey Ss, common orange weathering	
	61					Siltstone to vfg Ss, trace coal	From waste cyclone -not reliable as isn't cleaning due to sloughing
	64						

Hole ID: CM12-31							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	0					Coal	At surface, no sample taken
	10					Fine grained sandstone	
	13					Fine grained sandstone	
	16					Fine grained sandstone	
	19					Fine grained sandstone	
	22					Siltstone and fg sandstone	
	25					Fine grained sandstone	
	28					Fine grained sandstone	
	31					Fine grained sandstone	
1	31.5	32			0.5	Coal	
2	32	32.5			0.5	Coal	
3	32.5	33			0.5	Coal w/ minor shale	
4	33	33.5			0.5	Coal w/ shale	
5	33.5	34			0.5	Shale w/ minor coal	
6	34	34.5			0.5	Shale	
	37					Fine grained sandstone	
	40					Fine grained sandstone	Occasional orange weathering
	43					Fine grained sandstone	
	46					Fine grained sandstone	
	49					Fine grained sandstone	
	52					Fine grained sandstone	
7	53	53.5			0.5	Coal	
8	53.5	54			0.5	Coal	
9	54	54.5			0.5	Coal and shale	
10	54.5	55			0.5	Coal and shale	
11	55	55.5			0.5	Shale w/ trace coal	
	55.5	56			0.5	Shale	No sample taken
	56	56.5			0.5	Shale	No sample taken
12	56.5	57			0.5	Coal	
13	57	57.5			0.5	Coal	
14	57.5	58			0.5	Coal	
15	58	58.5			0.5	Shale	
16	58.5	59			0.5	Shale and coal	Shale on top
17	59	59.5			0.5	Coal	

Hole ID: CM12-31							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
18	59.5	60			0.5	Coal	
19	60	60.5			0.5	Coal	
20	60.5	61			0.5	Coal	
21	61	61.5			0.5	Coal	
22	61.5	62			0.5	Coal	
23	62	62.5			0.5	Coal	
24	62.5	63			0.5	Coal	
25	63	63.5			0.5	Coal	
26	63.5	64			0.5	Coal	
27	64	64.5			0.5	Coal	
28	64.5	65			0.5	Coal	
29	65	65.5			0.5	Coal	
30	65.5	66			0.5	Coal	
31	66	66.5			0.5	Coal	
32	66.5	67			0.5	Coal	
33	67	67.5			0.5	Coal	
34	67.5	68			0.5	Coal	
35	68	68.5			0.5	Coal and shale	
36	68.5	69			0.5	Coal	
37	69	69.5			0.5	Coal	
38	69.5	70			0.5	Coal	
39	70	70.5			0.5	Shale	
	70.5	71			0.5	Shale	No sample taken
40	78	78.5			0.5	Coal	
41	78.5	79			0.5	Coal	
42	79	79.5			0.5	Shale w/ minor coal	
	79.5	80			0.5	Shale	No sample taken
	80	80.5			0.5	Shale	No sample taken
	82					Shale	
	85					Shale	
	88					Shale w/ minor sandstone	
43	89	89.5			0.5	Coal	***Screen Sample #1 taken (water below screen)
44	89.5	90			0.5	Coal	

Hole ID: CM12-31							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
45	90	90.5			0.5	Coal	
46	90.5	91			0.5	Coal	
47	91	91.5			0.5	Sandstone w/ minor coal	
	91.5	92			0.5	Sandstone	No sample taken
	94					Mg sandstone	

Hole ID: CM12-33B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	0	3				Med. grey Sltstn, slightly carbonaceous, occ. muddy	Siltstone same as outcrop at surface
	3	6				Med. grey Sltstn, slightly carbonaceous, occ. muddy	
	6					Med. grey Sltstn, slightly carbonaceous, occ. muddy	
	9					Vfg, med grey sandstone, silty, carbonaceous	
	12					Vfg, med grey sandstone, silty, carbonaceous	
	15					Vfg, med grey sandstone, silty, carbonaceous	
	18					Vfg, med grey sandstone, silty, carbonaceous	Occ. Orange weathering and minor calcite (?)
	21					Vfg-fg, med grey sandstone, silty, carb. grains	Occ. Orange weathering and minor calcite (?)
	24					Vfg-fg, med grey sandstone, silty, carb. grains	Occ. Orange weathering and minor calcite (?)
	27					Vfg-fg, med grey sandstone, silty, carb. grains	Occ. Orange weathering and minor calcite (?)
	30					Vfg-fg, med grey sandstone, silty, carb. grains	Occ. Orange weathering and minor calcite (?)
	33					Vfg-fg, med grey sandstone, silty, carb. grains	Occ. Orange weathering and minor calcite (?)
	36					Fine grained, light grey sandstone	Minor orange weathering and calcite
	39					Fine grained, light grey sandstone	Occ. Calcite
	42					Fine grained, light grey sandstone w/ trace coal	Common orange weathering
	45					Fine grained, light grey ss w/ occ. coal/carb. grains	Common orange weathering
	48					Fine grained, light grey ss w/ occ. coal/carb. grains	Common orange weathering
	51					Fg, lt - med grey ss w/ occ. carb. grains	Rare calcite
	54					Fg, lt - med grey ss w/ occ. carb. grains	Rare calcite
	57					Fg, lt - med grey ss w/ occ. carb. grains	Rare calcite
	60					Fg, lt - med grey ss w/ occ. carb. grains	Rare calcite
	63					Fg, lt - med grey ss w/ occ. carb. grains	Rare calcite
	66					Fg, lt - med grey ss w/ occ. carb. grains	Rare calcite
	69					Fg, lt - med grey ss w/ occ. carb. grains	Rare calcite
	72					Fg, lt - med grey ss w/ occ. carb. grains	Rare calcite
	75					Fine grained, light grey sandstone w/ rare coal	Occ. calcite
	78					Sandstone as above to siltstone	
	81					Fine grained sandstone and siltstone	Coaly @ 83.5m (<0.5m)
	84					Siltstone to vfg sandstone	
1	85.5	86				Coal	
2	86	86.5				Coal	
3	86.5	87				Coal	
4	87	87.5				Coal	
5	87.5	88				Coal	
6	88	88.5				Coal w/ minor sandstone	
7	88.5	89				Sandstone w/ trace coal	
	89	89.5				Sandstone	No sample taken
	90					Fg -mg, light grey sandstone	

Hole ID: CM12-33B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	93					Medium grey siltstone	
	96					Fg -mg, light grey sandstone	Hard, orange weathering
	99					Fg, light grey sandstone	Trace orange weathering
8	101	101.5				Coal	
9	101.5	102				Sandstone w/ minor coal	
10	102	102.5				Sandstone	
	102.5	103				Fine grained sandstone	No sample taken
	105					Fg, light grey Sandstone w/ trace coal	
	108					Fg, light grey Sandstone w/ trace coal	Siltstone to vfg sandstone @ 109m
	111					Fg-mg, light grey sandstone	Hard, drills very slow
	114					Fg-mg, light grey sandstone	Hard, drills very slow
	117					Fg-mg, light grey sandstone	Coal @ 119-119.5m
	120					Fg-mg, light grey sandstone	Hard, drills very slow

Hole ID: CM12-34A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	0	8				Quartzite, grey - white, v. hard	As found at surface of pad - Boulders
	8	9				Coal	No returns from cyclone, not sampled
	9	16				Coal	Possibly shaley (waste cyclone showing black returns)
	16	22.5				SS at top, poss. coal @ just above 22.5m	
1	22.5	23			0.5	Coal w/ trace shale	
2	23	23.5				Coal and shale	Very small sample
3	23.5	24				Coal	Dry sample
4	24	24.5				Coal	Dry sample
5	24.5	25				Coal	Dry sample
6	25	25.5				Coal	Dry sample
7	25.5	26				Coal	Dry sample
8	26	26.5				Coal	Dry sample
9	26.5	27				Coal	Dry sample
10	27	27.5				Shale w/ minor coal	Dry sample
11	27.5	28				Shale	Dry sample
12	28	28.5				Shale w/ coal	Dry sample
13	28.5	29				Shale and coal	Dry sample
14	29	29.5				Coal w/ shale	Dry sample
15	29.5	30				Shale w/ trace coal	
16	30	30.5				Shale	
	31					Shale and siltstone	
	34					Siltstone	
	37					Siltstone	
	40					Fine grained sandstone	
	43					SS/Quartzite, slightly silty, med gy - white	Very hard
	46					SS/Quartzite, slightly silty, med gy - white	Very hard
	49					SS/Quartzite, slightly silty, med gy - white	Very hard
	52					SS/Quartzite, slightly silty, med gy - white	Very hard, finer grained than above
	55					SS/Quartzite, slightly silty, med gy - white	Very hard
	58					SS/Quartzite, slightly silty, med gy - white	Very hard
	61					SS/Quartzite, slightly silty, med gy - white	Very hard
	64					SS/Quartzite, slightly silty, med gy - white	Very hard
	67					SS/Quartzite, slightly silty, med gy - white	Very hard
	70					SS/Quartzite, slightly silty, med gy - white	Very hard
17	70.5	71				Coal w/ shale	

Hole ID: CM12-34A							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
18	71	71.5				Coal w/ shale	
19	71.5	72				Shale w/ trace coal	
	72	72.5				Shale	No sample taken
20	74	74.5				Coal w/ minor shale	Very small sample
21	74.5	75				Coal	
22	75	75.5				Coal	
23	75.5	76				Coal	
24	76	76.5				Carbonaceous shale, black	
25	76.5	77				Shale and SS/Quartzite	
	79					vfg, med gy SS/Quartzite	Very hard
	82					vfg, med gy SS/Quartzite	Very hard
	85					vfg, med gy SS/Quartzite	Very hard
	88					vfg, med gy SS/Quartzite	Very hard
	91.5	92				Coal	
	92	92.5				Coal	
	92.5	93				vfg, med grey SS/Quartzite	
	94					Shale	
29	95.5	96				Carbonaceous shale w/ trace coal	
	96	96.5				mg, med grey Sandstone	No sample taken
	97.5	98				Carbonaceous shale w/ trace coal shows	No sample taken
	98	98.5				Med. grained Sandstone	No sample taken
	100					Med. grained Sandstone	
	103					Med. grained SS w/ trace coal shows	
	105					Med. grained Sandstone	Hard
30	105.5	106				Coal w/ minor carbonaceous shale	Carbonaceous shale on top
31	106	106.5				Coal w/ minor carbonaceous shale	
32	106.5	107				Med. grained SS w/ trace coal shows	No sample taken
	107	107.5					
	112					Med. grained Sandstone	

Hole ID: CM12-34B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
		9.0				shale and ss, mg	
		12.0				shale, siltstone, minor ss and coal	large chips
		13.0				carbonaceous shale with coal shows	
1	15.0	15.5				carbonaceous shale with minor coal	
2	15.5	16.0				carbonaceous shale with minor coal	
3	16.0	16.5				coal with minor carbonaceous shale	
4	16.5	17.0				coal and shale	
5	17.0	17.5				coal	
6	17.5	18.0				coal	***Screen sample #2 taken (water below screen)
7	18.0	18.5				shale and coal	
8	18.5	19.0				coal and shale	
9	19.0	19.5				coal	
10	19.5	20.0				coal	
11	20.0	20.5				coal	
12	20.5	21.0				coal with minor shale	
13	21.0	21.5				coal	
14	21.5	22.0				coal	
15	22.0	22.5				coal	
16	22.5	23.0				coal	
17	23.0	23.5				coal	
18	23.5	24.0				coal	
19	24.0	24.5				coal and shale	
20	24.5	25.0				coal and shale	
21	25.0	25.5				shale and coal	
22	25.5	26.0				shale with minor coal	
	26.0	26.5				shale	no sample taken
		28.0				shale	
		31.0				shale	
23	32.5	33.0				coal	
24	33.0	33.5				coal	
25	33.5	34.0				coal with minor shale	
	34.0	34.5				shale	no sample taken

Hole ID: CM12-34B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
26	36.0	36.5				coal with minor carbonaceous shale	
27	36.5	37.0				coal	
	37.0	37.5				shale	no sample taken
	37.5	38.0				shale	no sample taken
		40.0				shale	
		43.0				shale	
		47.0				shale with coal shows	
		49.0				shale	
		52.0				shale, silty	
		55.0				shale and siltstone	
		58.0				shale with coal shows	
		61.0				shale	
		64.0				shale and siltstone	
		66.0				carbonaceous shale	
28	67.0	67.5				coal	dry sample
29	67.5	68.0				shale with coal	dry sample
30	68.0	68.5				shale with trace coal	
31	68.5	69.0				shale	
32	69.0	69.5				shale	
	69.5	70.0				shale	no sample taken
33	70.0	70.5				shale w/minor coal & minor carbonaceous shale	
	70.5	71.0				shale with trace coal shows	no sample taken
		73.0				shale and sandstone/quartzite, vfg, hard	
		76.0				sandstone/quartzite, vfg, hard	
		79.0				SS, vfg, quartzite mineralization, med gy	
		82.0				SS, vfg, quartzite mineralization, med gy	
		85.0				SS/quartztie, vfg, hard, trace coal shows	
34	86.0	86.5				coal	
35	86.5	87.0				coal with trace shale	
36	87.0	87.5				shale with trace coal	
37	87.5	88.0				shale	
	88.0	88.5				shale, no sample taken	

Hole ID: CM12-34B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
38	89.5	90.0				shale, slightly carbonaceous	
	90.0	90.5				shale	no sample taken
		91.0				sandstone, fg-mg, hard, light-med gy	
		94.0				sandstone, fg-mg, hard, light-med gy	
39	96.5	97.0				coal and sand	
40	97.0	97.5				sand with coal	
41	97.5	98.0				coal with minor sand	
42	98.0	98.5				sand	
	98.5	99.0				sandstone, mg, hard	no sample taken
		100.0				sandstone, mg, hard	
		103.0				sandstone, mg, hard	
		106.0				sandstone, mg, hard	
		109.0				sandstone, mg, hard	TD

Hole ID: CM12-36B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	6					Fine grained sandstone	
	9					Fine grained sandstone	
	12					Fine grained sandstone	
	15					Fine grained sandstone	
	18					Fine grained sandstone	
	21					Fine grained sandstone	
	24					Fine grained sandstone	Harder @ ~23m quartzite cement
	27					V. fine to fine grained sandstone	Hard, drills slow
	30					V. fine to fine sandstone w/ quartzite cement	Hard
	33					V. fine to fine sandstone w/ quartzite cement	Hard
	36					V. fine to fine sandstone w/ quartzite cement	Hard
	39					V. fine to fine sandstone w/ quartzite cement	Hard
	42					V. fine to fine sandstone w/ quartzite cement	Hard
	45					V. fine to fine sandstone w/ quartzite cement	Hard
	48					V. fine to fine sandstone w/ quartzite cement	Hard
	51					V. fine to fine sandstone w/ quartzite cement	Hard
	54					Fg to med grained sandstone w/ quartzite cement	Hard
	57					Fg to med grained sandstone w/ quartzite cement	Very hard @ 54.5m
	60					Fg to med grained sandstone w/ quartzite cement	
	63					Fg to med grained ss w/ trace coal/carb sh	
1	65.5	66			0.5	Coal	
2	66	66.5			0.5	coal and sandstone	
3	66.5	67			0.5	Sandstone w/ trace coal	
	67	67.5			0.5	Sandstone	No sample taken
	69					Fine to medium grained sandstone	Slow to drill
	72					Fine to medium grained sandstone	Slow to drill
	75					Fine to medium grained sandstone	Slow to drill

Hole ID: CM12-38B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	6					Shale	
	9					Shale	
	12					Shale	
	15					Siltstone and vfg Sandstone	Minor orange weathering
	18					Siltstone and vfg Sandstone	Minor orange weathering
	21					fg to mg sandstone	
	24					Medium grained light grey sandstone	
	27					Medium grained light grey sandstone	
	30					Medium grained sandstone w/ orange weathering	
	33					Medium grained sandstone w/ orange weathering	Cuttings from waste cyclone, interchange to cyclone plugged
	36					Siltstone, shale, and fg-mg sandstone	Contaminated(?), first sample after interchange to cyclone unplugged
	39					Medium grained sandstone	
	42					Fine grained light grey sandstone	
	45					Fine to medium grained sandstone	Occ. Weathering and calcite (?), coarser @ 44m-drills slow
	48					Fine to medium grained sandstone	Com. orange weathering, hard, drills slow
	51					Fine to medium grained sandstone	Com. orange weathering, hard, drills slow
	54					Fine to medium grained sandstone	Com. orange weathering, hard, drills slow
	57					Fine to medium grained sandstone	Com. orange weathering, hard, drills slow
	60					Fine to medium grained sandstone	Com. orange weathering, hard, drills slow
	63					Fine to medium grained sandstone	Com. orange weathering, hard, drills slow
	66					Fine to medium grained sandstone	Com. orange weathering, hard, drills slow
	69					Fine to medium grained sandstone	Com. orange weathering, hard, drills slow
	72					Vfg - fg sandstone, occ. medium grained	
	75					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization
	78					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization
	81					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization
	84					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization
	87					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization
	90					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization

Hole ID: CM12-38B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	93					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization
	96					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization
	99					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization
	102					Fg sandstone w/ trace coal/carbonaceous shows	Occ. white mineralization, slightly coarser grained than above
	105					Vfg-fg med grey ss and siltstone w/ trace coal	Occ. mineralization and weathering
	108					Vfg-fg med grey ss and siltstone w/ trace coal	Occ. mineralization and weathering
	111					Vfg-fg med grey ss and siltstone w/ trace coal	Occ. mineralization and weathering
	114					Vfg-fg med grey ss and siltstone w/ trace coal	Occ. mineralization and weathering
	117					Vfg-fg med grey ss and siltstone w/ trace coal	Occ. mineralization and weathering
	120					Vfg-fg med grey ss and siltstone w/ trace coal	Occ. mineralization and weathering
	123					Vfg-fg med grey ss and siltstone w/ trace coal	Occ. mineralization and weathering
	126					Vfg-fg med grey ss and siltstone w/ trace coal	Occ. mineralization and weathering
	129					Vfg-fg med grey ss and siltstone w/ trace coal	Occ. mineralization and weathering
	132					Fg, med grey ss w/ minor siltstone and trace coal	Occ. White mineralization & orange weathering
	135					Fg, med grey ss w/ minor siltstone and trace coal	Occ. White mineralization & orange weathering
	138					Fg, med grey ss w/ minor siltstone and trace coal	Occ. White mineralization & orange weathering
	141					Fg, med grey sandstone	Occ. White mineralization & orange weathering
	144					Fg, med grey sandstone	Occ. White mineralization & orange weathering
	147					Vfg-fg med grey sandstone w/ trace coal	Common white mineralization
	150					Fg - mg light grey sandstone w/ trace coal	Common white mineralization
1	152.5	153				Sandstone w/ minor coal	
2	153	153.5				Sandstone w/ minor coal	
3	153.5	154				Coal	
4	154	154.5				Coal	
5	154.5	155				Sandstone w/ minor coal	
6	155	155.5				Sandstone w/ minor coal	
7	155.5	156				Sandstone w/ minor coal	
8	156	156.5				Sandstone w/ minor coal	Coal on top
	156.5	157				Sandstone	No sample taken
	157	157.5				Sandstone	No sample taken

Hole ID: CM12-38B							
Sample #	Depth		Corrected Depth		Interval	Description	Notes
	From	To	From	To			
	159					Vfg, medium grey sandstone	
	162					Shale	
	165					Vfg-fg snadstone to sandy siltstone	
	168					Carbonaceous shale to shale w/ coal shows	KD
9	168	168.5				Carbonaceous shale and coal	
10	168.5	169				Coal and carbonaceous shale	
11	169	169.5				Carbonaceous shale and coal	
12	169.5	170				Shale w/ trace coal	
	170	170.5				Shale	No sample taken
	170.5	171				Shale	No sample taken
	174					Shale	
	177					Med grained sandstone and shale	
	180					Medium grained sandstone	
13	182.5	183				Carbonaceous shale & shale w/ trace coal	
14	183	183.5				Coal and carbonaceous shale	
15	183.5	184				Coal	
16	184	184.5				Coal w/ minor shale	
17	184.5	185				Sand w/ trace coal	Loose sand grains
	185	185.5				Med grained sandstone and sand	No sample taken
	185.5	186				Med grained sandstone and sand	No sample taken
	189					Medium grained sandstone	
	192					Medium grained sandstone	TD

Appendix 3 – Core Photos

CM11-03A
Run # 1
23.75 - 24.5m

CM11-03A
Run # 2
24.5 – 27.0m


CM11-03A
Run # 3
27.0-29.0m

CM11-03A

Run #4

29.0 - 32.0m

CM11-03A
Run # 4
32.0 – 33.0m

Appendix 4 – Geophysical Logs

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-02

COMPANY	CROWN MOUNTAIN EXPLORATION
WELL	CM11-02
FIELD	N/A
COUNTRY	CANADA
PROVINCE	ALBERTA

OTHER SERVICES:
NEU
DEN-TR
DEN-TR

LSD	N/A
SECTION	N/A
TOWNSHIP	N/A
RANGE	N/A
LICENCE NO.	N/A
UNIQUE WELL ID.	N/A

PERMANENT DATUM	:GL	ELEVATION KB	N/A
LOG MEASURED FROM	:GL	ELEVATION DF	N/A
DRL MEASURED FROM	:GL	ELEVATION GL	N/A
DATE	:08/12/12	RIG NUMBER	:GED
DEPTH DRILLER	:174.00	LOGGER TD	:170.52
BIT SIZE	:120.65	ARRIVAL TIME	:07:00
LOG TOP	:-0.15	DEPARTURE TIME	:12:00
LOG BOTTOM	:51.79	CIRC STOPPED	:N/A
CASING LOGGER	:3.00		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:H20		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:Y.LEE		
RECORDED BY	:K.HUDGEON		
REMARKS 1	:BRIDGED @ 52.00M		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

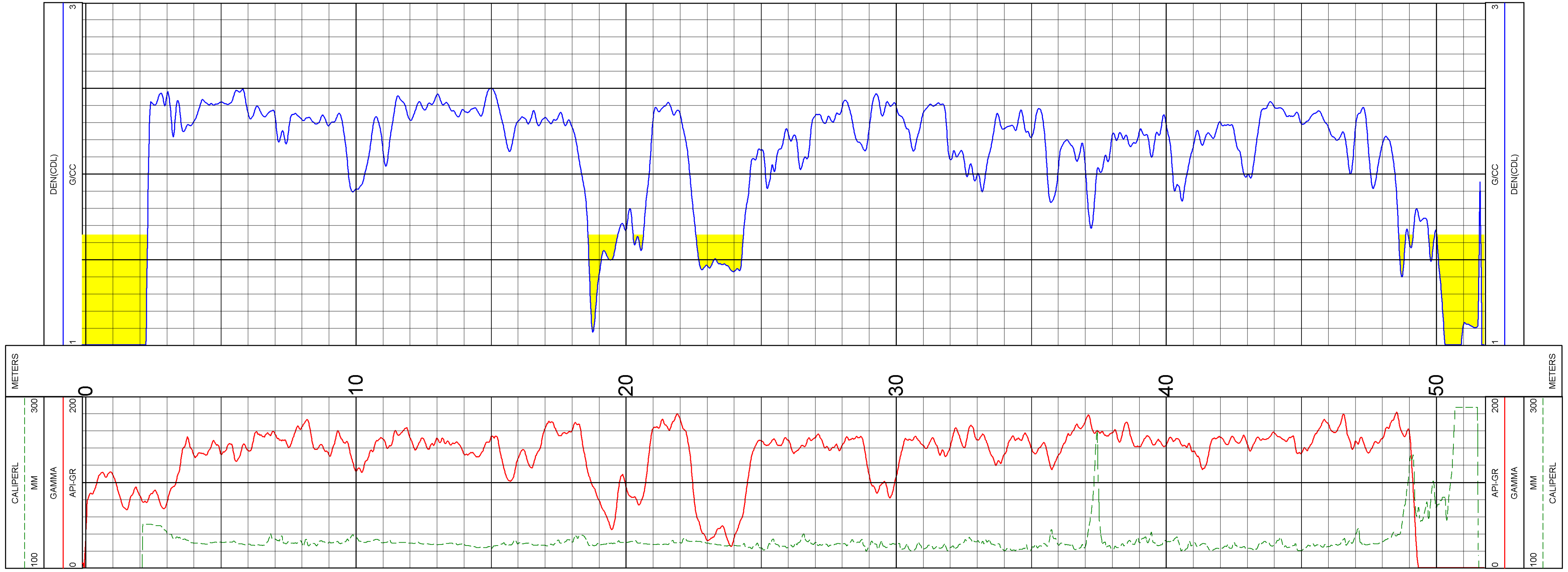
<user entered title> CM11-02 08/12/12

LOG PARAMETERS

MATRIX DENSITY : 2.65
MAGNETIC DECL. : 35.00
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-NORES.0 08/12/2012

NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KG



<user entered title> CM11-02 08/12/12

LOG PARAMETERS

MATRIX DENSITY : 2.65
MAGNETIC DECL. : 35.00
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-NORES.0 08/12/2012

NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KG

TOOL CALIBRATION CM11-02 08/12/12 12:18
TOOL : 9239C1
SERIAL NUMBER : 108
TM VERSION 2025

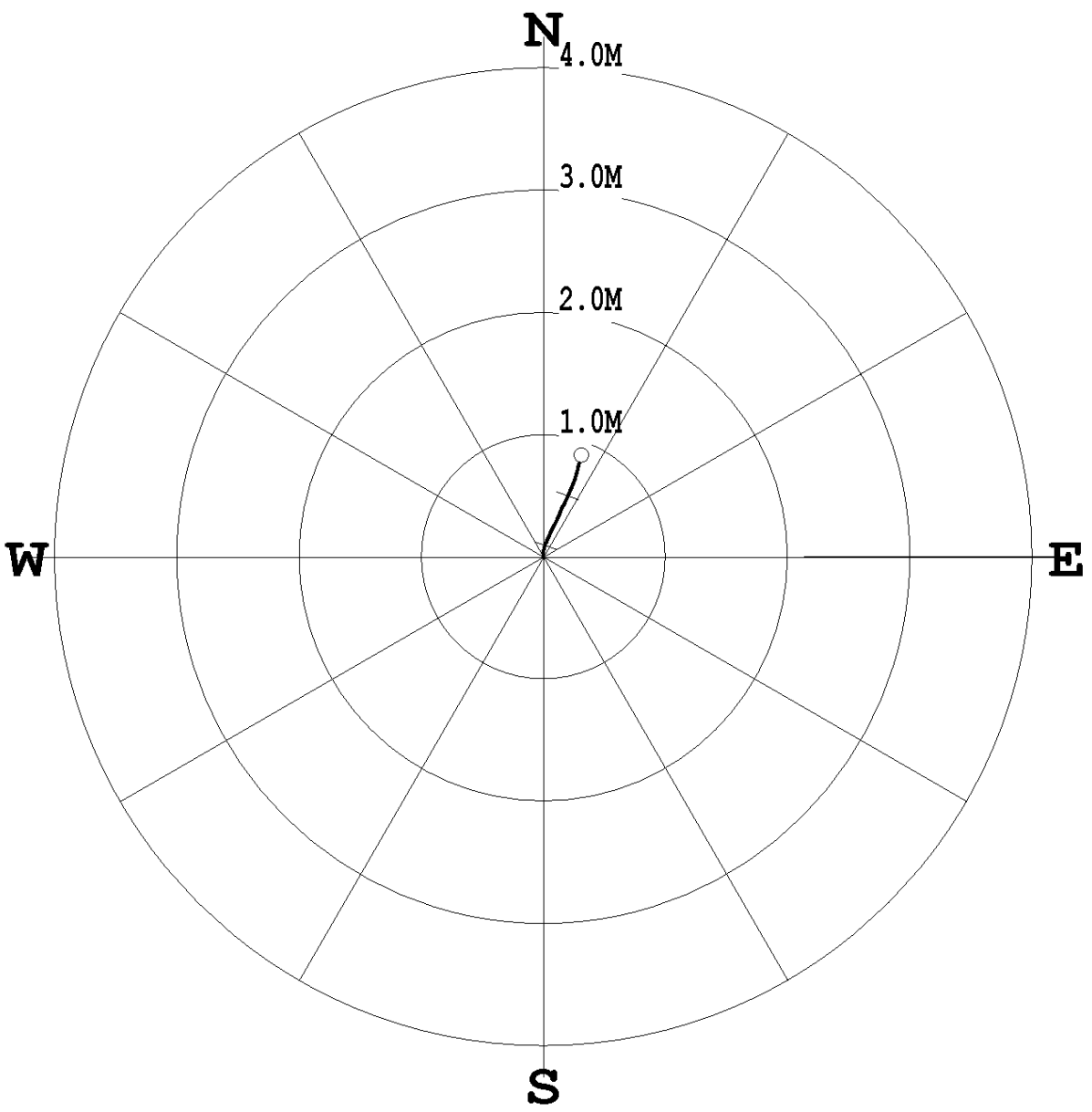
	DATE	TIME	SENSOR	STANDARD	RESPONSE	
			GAMMA	0.000	8.000	[CPS]
			GAMMA	545.000	557.000	[CPS]
			VOLTAGE	27.300	6079.000	[CPS]
			VOLTAGE	238.500	55554.000	[CPS]
			CALIPER	Default	Default	[CPS]
1	Apr19.12	13:57:22	CALIPER	Default	Default	[CPS]
1	Apr19.12	13:57:22	DEN(LS)	1.820	12718.000	[CPS]
1	Apr19.12	13:15:59	DEN(SS)	2.650	21428.000	[CPS]
2	Apr19.12	13:15:59	DEN(SS)	2.650	51131.000	[CPS]
2	Apr19.12	13:15:59	CALIPERL	100.000	16000.000	[CPS]
3	Nov17.06	07:48:07	CALIPERL	200.000	271787.000	[CPS]
	Nov17.06	07:48:07	CURRENT	27.300	8142.000	[CPS]
	Nov17.06	07:48:07	CURRENT	238.500	24464.000	[CPS]
4	Jul11.12	22:31:11	E, X	Default		[CPS]
4	Jul11.12	22:31:11		Default		
5	Jul11.12	22:30:53	DEN(SS)	1.580	51131.000	[CPS]
5	Jul11.12	22:30:53	DEN(LS)	2.580	21428.000	[CPS]
6	Jul11.12	22:30:53	CALIPERL	100.000	16000.000	[CPS]
6	Apr19.12	12:49:02	CALIPERL	200.000	271787.000	[CPS]
7	Apr19.12	13:16:17	CURRENT	27.300	8142.000	[CPS]
7	Apr19.12	13:16:17	CURRENT	238.500	24464.000	[CPS]
8	Nov17.06	07:48:07	E, X	Default		[CPS]
9	Nov17.06	07:48:07		Default		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-02
DATE OF LOG: 08/12/12
PROBE: 9055A 59

MAG DECL: 15.3

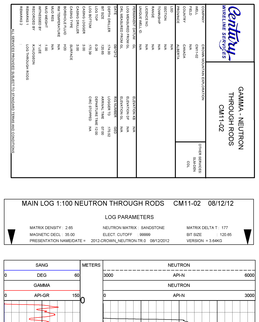
SCALE: 1 M/CM
TRUE DEPTH: 52.14 M
AZIMUTH: 20.3
DISTANCE: 0.9 M
+ = 20 M INCR
○ = BOTTOM OF HOLE

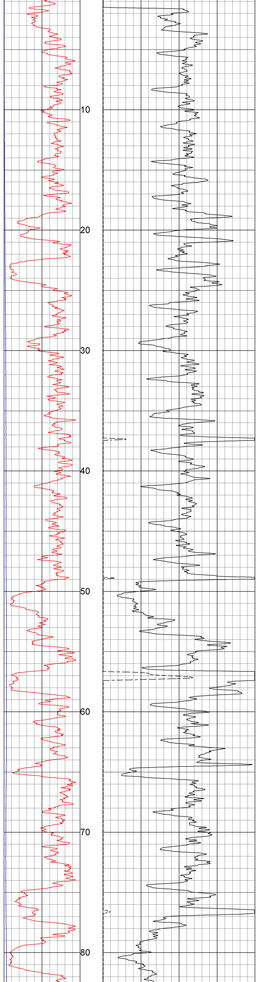


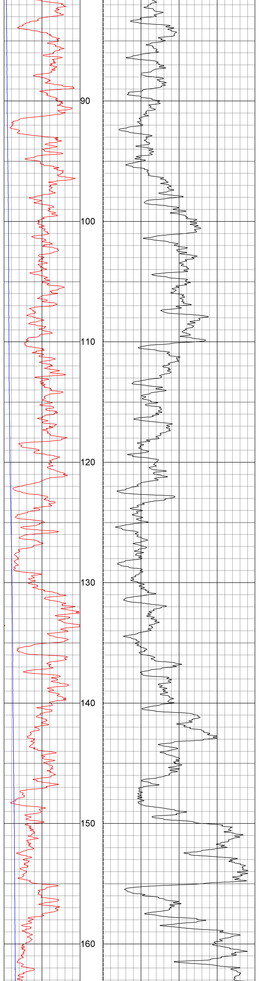
* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM11-02
FIELD OFFICE : CENTURY GEO DATE OF LOG : 08/12/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 15.300 DEPTH UNITS : METERS
LOG: CM11-02_08-12-12_11-37_9055A_.01_6.00_52.15_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
6.00	6.00	0.00	0.00	0.0	16.0	0.1	16.0
7.00	7.00	0.00	-0.00	0.0	300.0	0.3	316.5
8.00	8.00	0.01	-0.00	0.0	335.9	0.5	17.5
9.00	9.00	0.01	-0.00	0.0	345.7	0.4	346.6
10.00	10.00	0.02	-0.00	0.0	348.8	0.3	19.2
11.00	11.00	0.03	-0.01	0.0	347.4	0.2	341.1
12.00	12.00	0.03	-0.01	0.0	349.0	0.3	21.4
13.00	13.00	0.04	-0.00	0.0	354.4	0.6	349.8
14.00	14.00	0.05	-0.00	0.0	358.6	0.5	7.9
15.00	15.00	0.05	0.00	0.1	0.4	0.5	17.9
16.00	16.00	0.06	0.00	0.1	1.4	0.4	334.2
17.00	17.00	0.07	0.00	0.1	2.6	0.5	18.1
18.00	18.00	0.08	0.00	0.1	3.3	0.9	351.6
19.00	19.00	0.09	0.01	0.1	5.6	0.8	45.9
20.00	20.00	0.10	0.01	0.1	6.7	0.7	22.6
21.00	21.00	0.11	0.01	0.1	7.4	1.0	38.4
22.00	22.00	0.12	0.02	0.1	9.9	0.7	32.1
23.00	23.00	0.13	0.03	0.1	10.8	0.8	20.1
24.00	24.00	0.14	0.03	0.1	11.8	0.7	17.5
25.00	25.00	0.16	0.04	0.2	13.3	1.1	23.2
26.00	26.00	0.18	0.05	0.2	14.8	1.2	26.3
27.00	27.00	0.20	0.05	0.2	15.4	1.1	22.8
28.00	28.00	0.22	0.06	0.2	16.3	1.5	41.1
29.00	29.00	0.24	0.07	0.2	16.9	1.3	31.5
30.00	30.00	0.25	0.08	0.3	18.1	1.2	41.2
31.00	31.00	0.28	0.09	0.3	18.8	1.2	29.6
32.00	32.00	0.30	0.10	0.3	19.4	1.5	32.4
33.00	33.00	0.32	0.12	0.3	19.7	1.6	36.3
34.00	34.00	0.35	0.13	0.4	20.2	1.4	21.8
35.00	35.00	0.37	0.14	0.4	20.2	1.5	17.7
36.00	36.00	0.39	0.15	0.4	20.4	1.4	34.5
37.00	37.00	0.42	0.16	0.4	20.7	1.9	34.3
38.00	37.99	0.44	0.17	0.5	21.3	1.5	34.6
39.00	38.99	0.47	0.19	0.5	21.5	1.9	27.1
40.00	39.99	0.50	0.20	0.5	21.6	1.8	22.8
41.00	40.99	0.53	0.21	0.6	21.7	1.7	12.4
42.00	41.99	0.55	0.22	0.6	21.8	1.8	31.0
43.00	42.99	0.58	0.23	0.6	21.9	1.7	23.4
44.00	43.99	0.61	0.24	0.7	21.8	1.4	20.4
45.00	44.99	0.64	0.26	0.7	21.8	1.7	26.6
46.00	45.99	0.67	0.26	0.7	21.6	1.9	19.5
47.00	46.99	0.70	0.27	0.8	21.3	1.7	14.6
48.00	47.99	0.73	0.28	0.8	21.1	1.6	10.6
49.00	48.99	0.76	0.29	0.8	20.8	1.7	11.4
50.00	49.99	0.79	0.30	0.8	20.6	1.5	14.1
51.00	50.99	0.81	0.30	0.9	20.5	1.1	11.3
52.00	51.99	0.83	0.31	0.9	20.3	1.7	20.6
52.15	52.12	0.83	0.31	0.9	20.3	1.7	21.1







TOOL CALIBRATION .CM11-02 08/12/12 08:12
TOOL SONDA TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug12,12	08:46:33	GAMMA	Default	[CPS]	Default	[CPS]
	Aug12,12	08:46:33	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:56	PORCENT	Default	[CPS]		
3	Aug12,12	08:46:22	RES	0.000	[OHM	9675.000	[CPS]
	Aug12,12	08:46:22	RES	10000.000	[OHM	1000.000	[CPS]
4	Aug12,12	08:46:09	SF	0.000	[MV	1.000	[CPS]
	Aug12,12	08:46:09	SF	383.000	[MV	3482.000	[CPS]
5	Aug12,12	08:45:48	NEUTRON	0.000	[API-N]	99.000	[CPS]
	Aug12,12	08:45:48	NEUTRON	172.000	[API-N]	91.000	[CPS]
6	Oct15,07	08:00:56	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:56	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-02B

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-02B
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:BRITISH COLUMBIA

OTHER SERVICES:
DEV
DEN TR
NEU TR

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

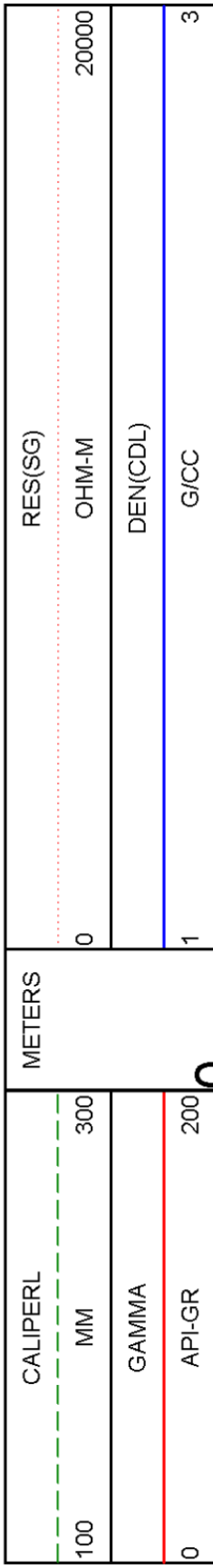
DATE	:08/22/12	RIG NUMBER	:GOOD EARTH
DEPTH DRILLER	:144.00	LOGGER TD	:144.20
BIT SIZE	:120.65	ARRIVAL TIME	:20:30
LOG TOP	:0.00	DEPARTURE TIME	:02:30
LOG BOTTOM	:143.96	CIRC STOPPED	:N/A
CASING LOGGER	:2.85		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:M. ESKRICK		
RECORDED BY	:M. LEBEDA		
REMARKS 1	:AZIMUTH: 65, ANGLE: 50		
REMARKS 2	:WATER LEVEL: 86.8M		

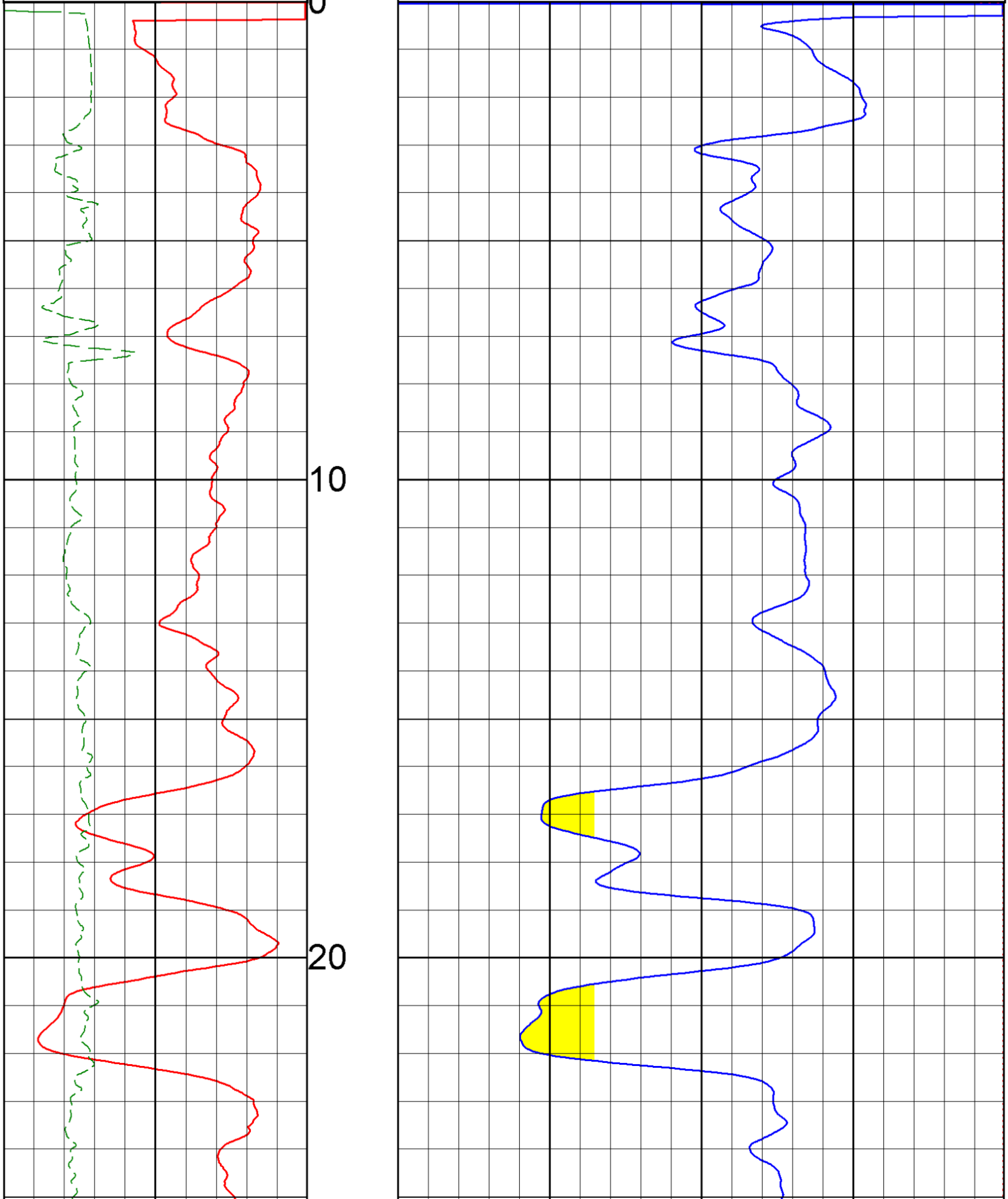
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAMMA DENSITY 1:100 CM11-02B 08/22/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 35.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/22/2012		VERSION = 3.64KF	

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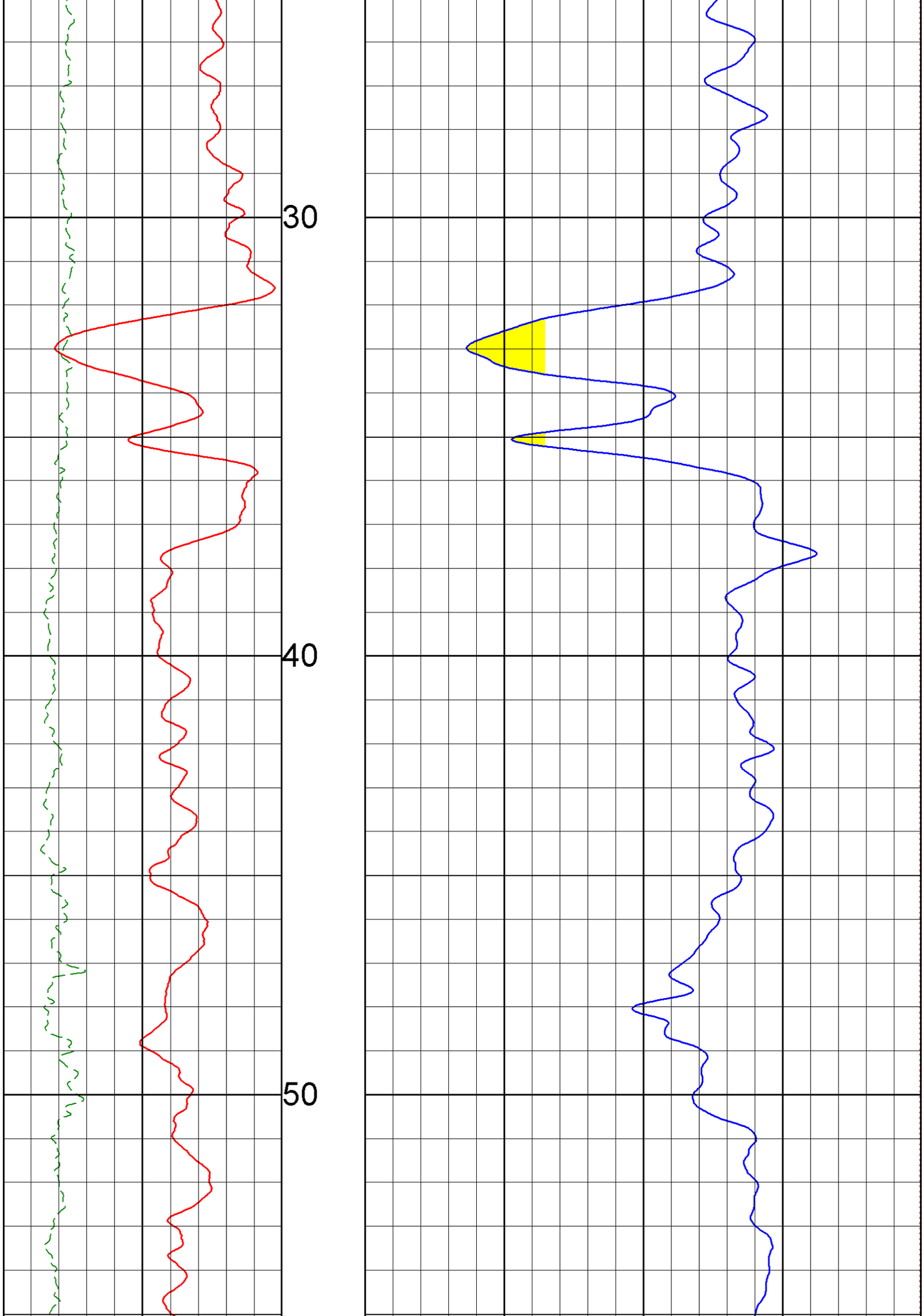
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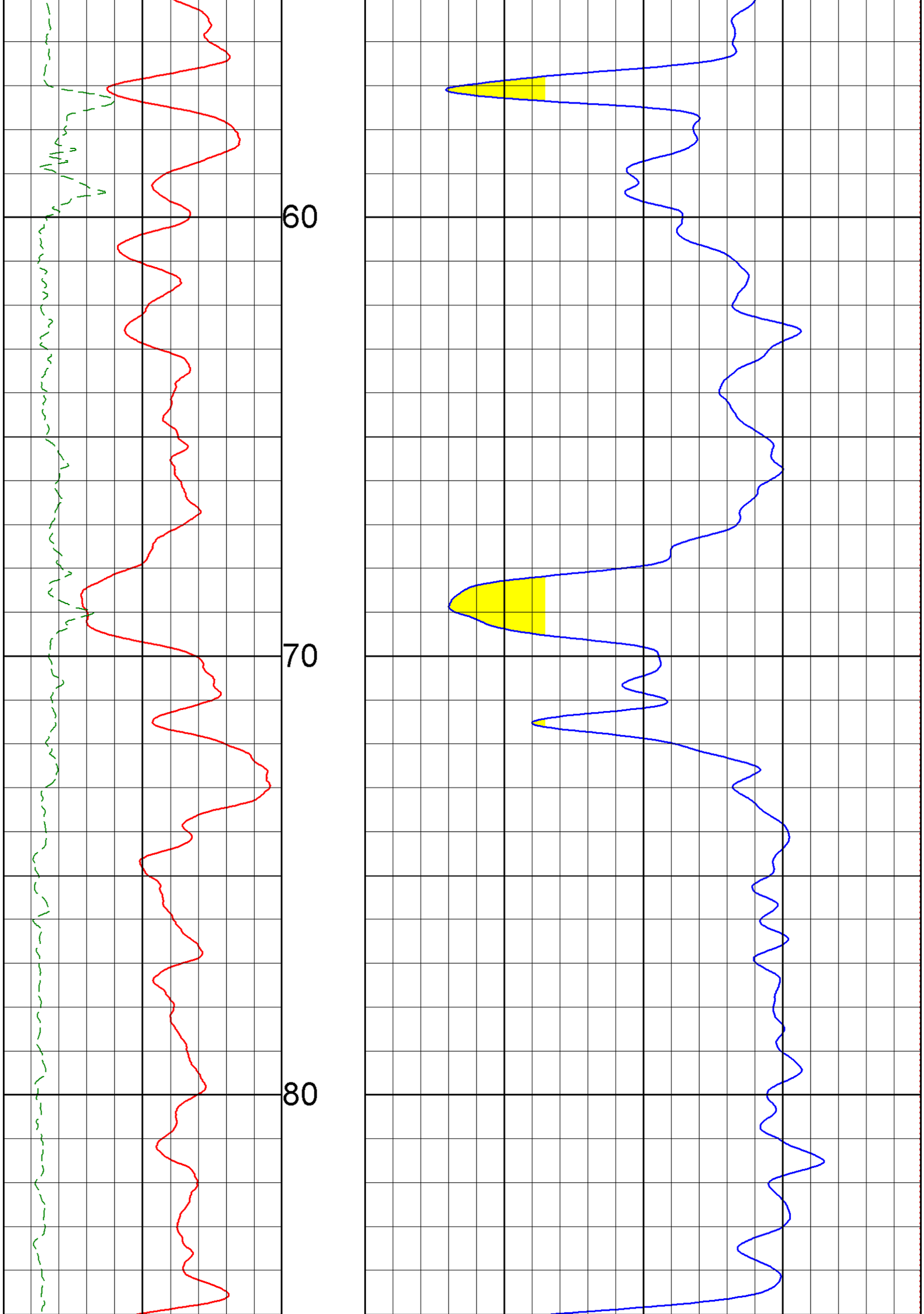
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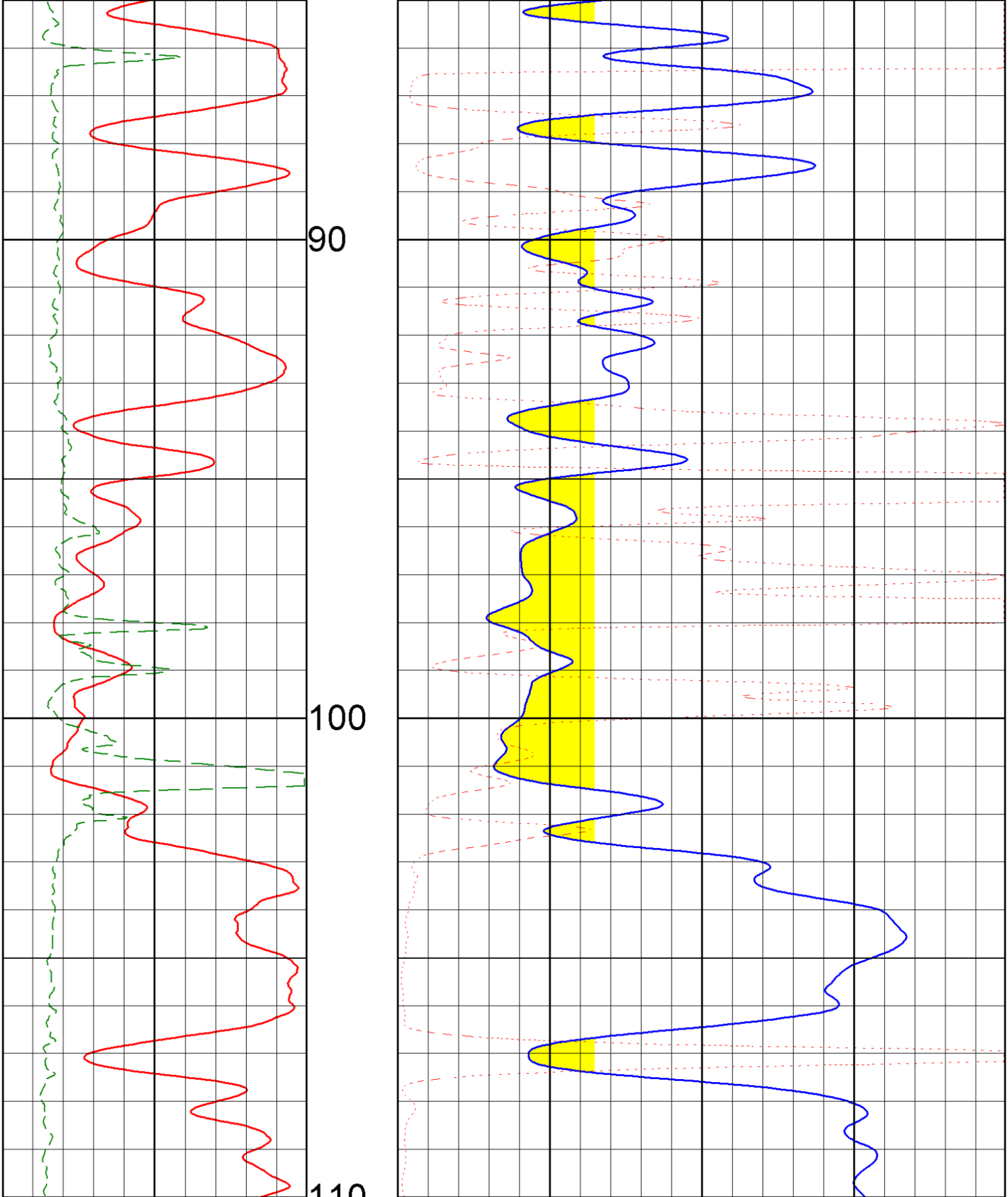
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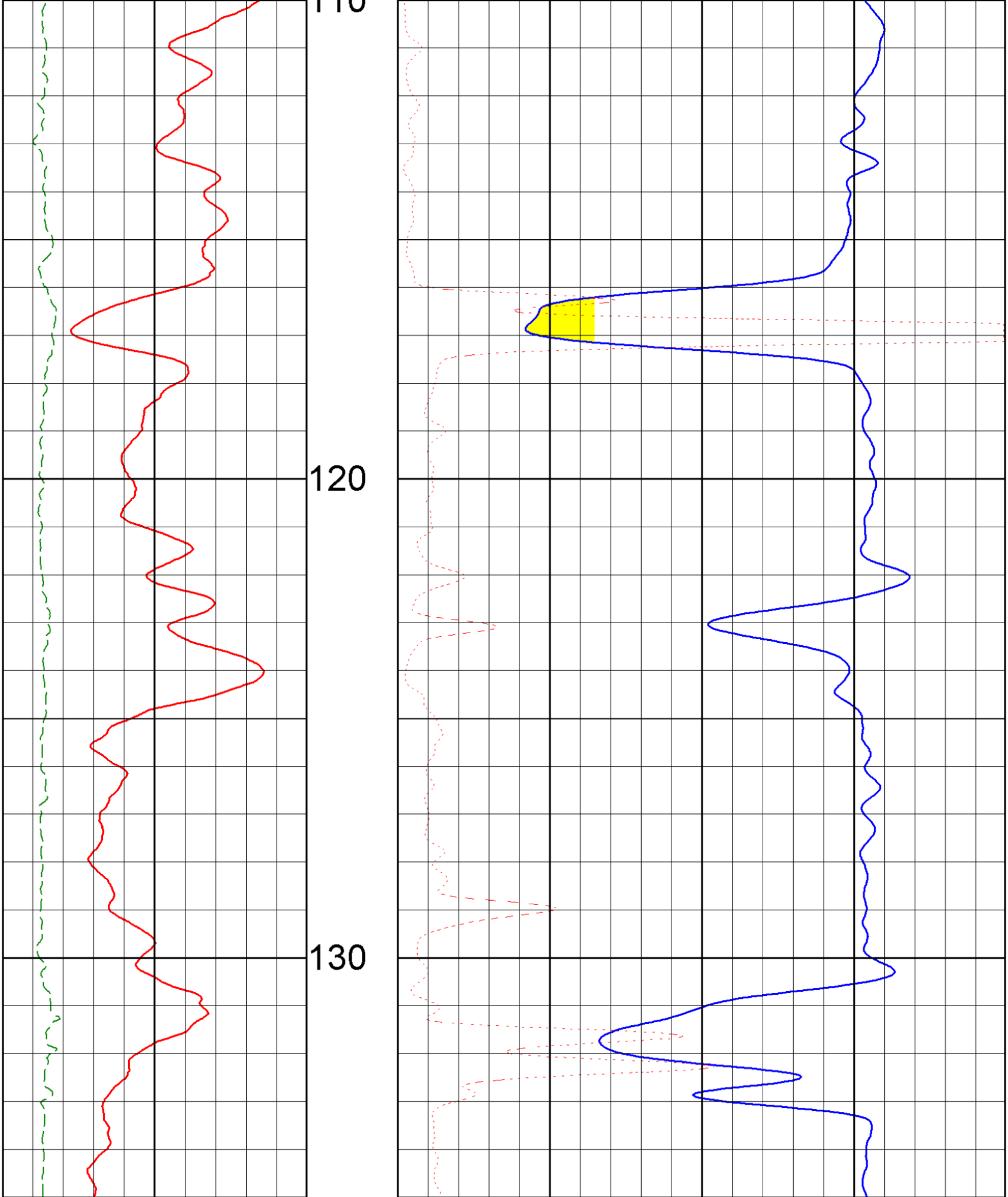
100
110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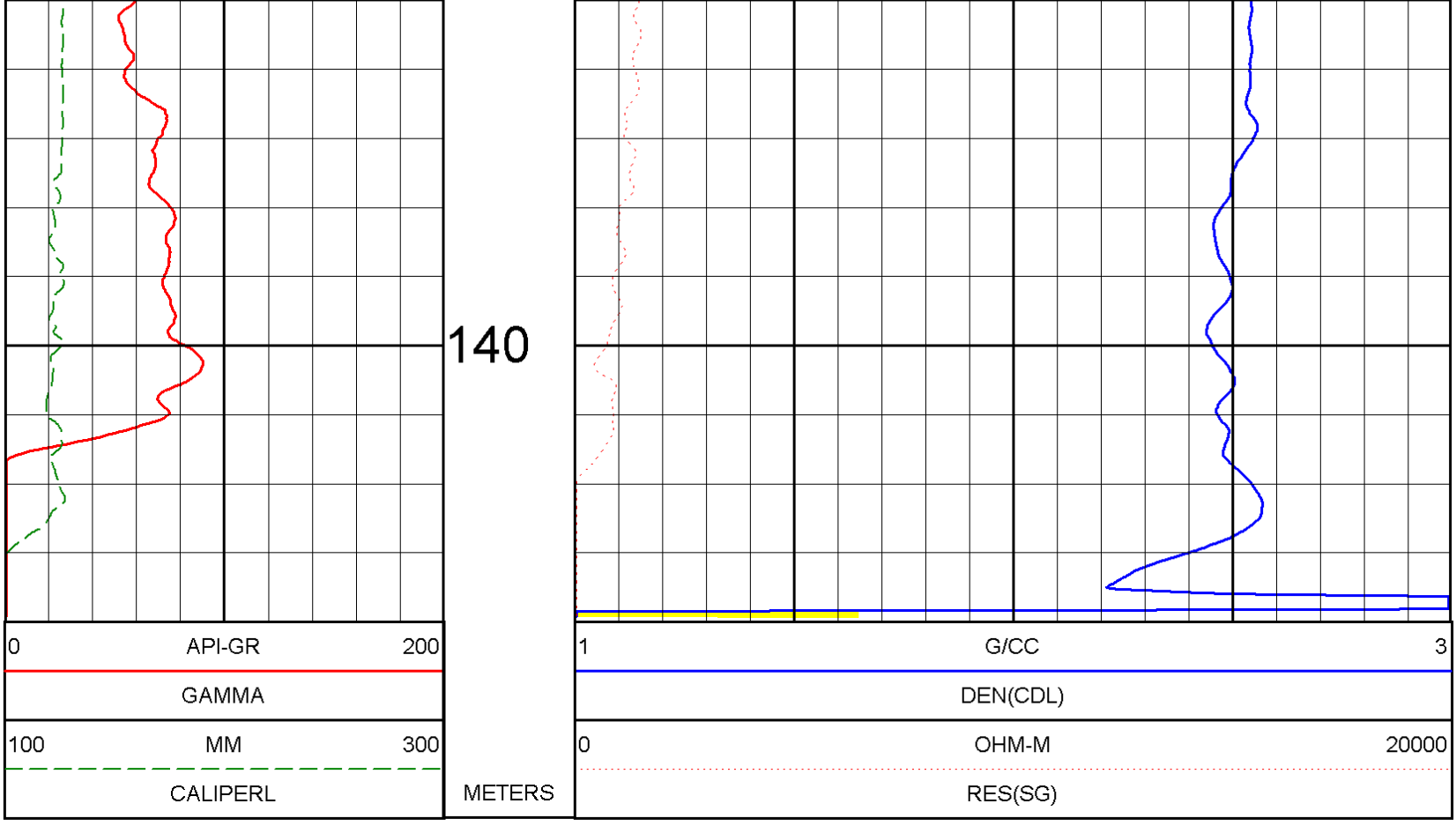
120
130



GAMMA DENSITY 1:100 CM11-02B 08/22/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 35.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/22/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-02B 08/22/12 01:19
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 2404

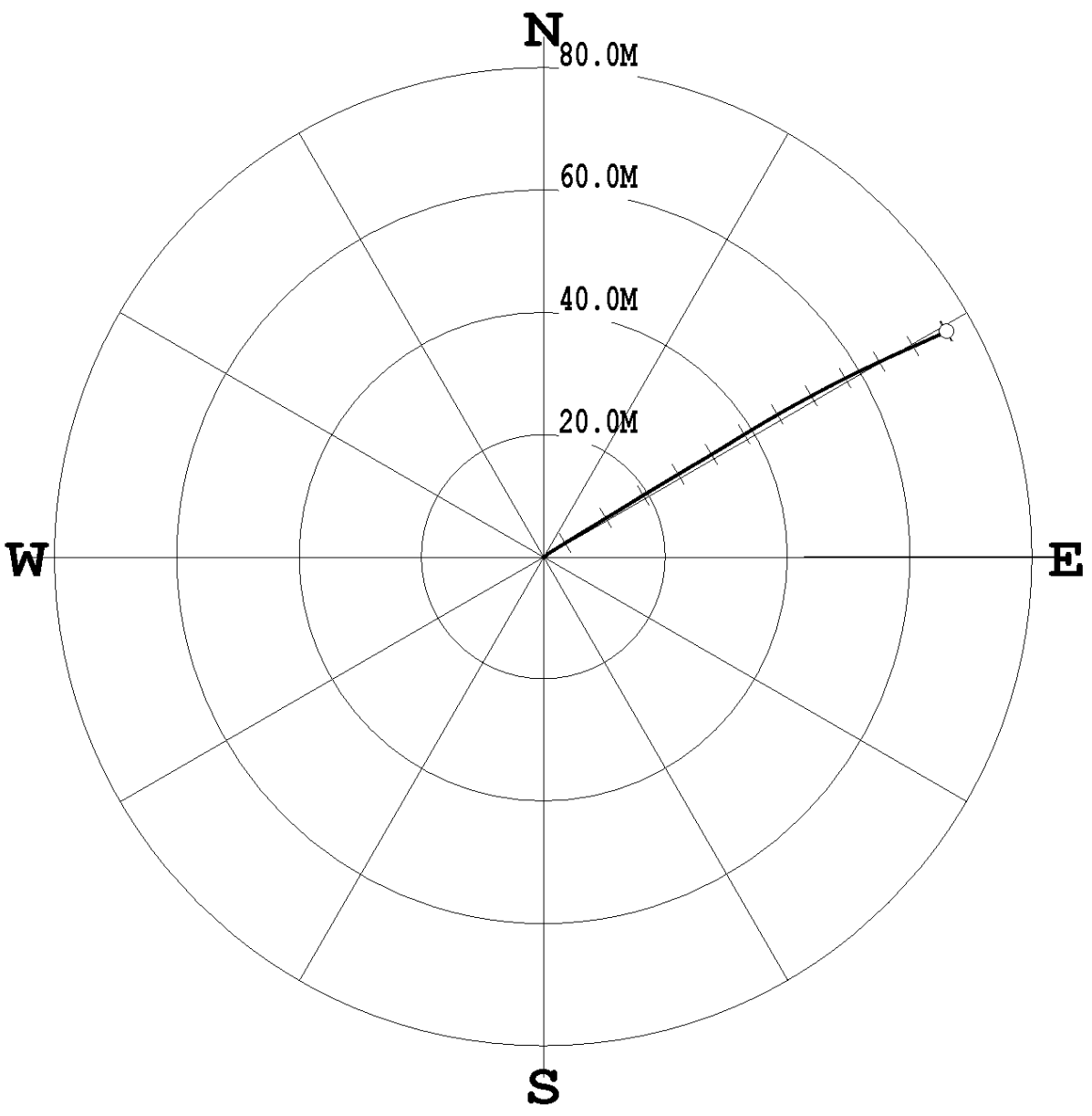
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Jun02,12	16:01:05	GAMMA	0.000	[API-GR]	4.000	[CPS]
	Jun02,12	16:01:05	GAMMA	545.000	[API-GR]	635.000	[CPS]
2	Jun02,12	16:20:27	VOLTAGE	23.000	[MV]	6860.000	[CPS]
	Jun02,12	16:20:27	VOLTAGE	225.000	[MV]	34055.000	[CPS]
3	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
4	Jun02,12	16:01:58	DEN(LS)	1.620	[G/CC]	13852.000	[CPS]
	Jun02,12	16:01:58	DEN(LS)	2.612	[G/CC]	1895.000	[CPS]
5	Jun02,12	16:02:26	DEN(SS)	1.590	[G/CC]	45738.000	[CPS]
	Jun02,12	16:02:26	DEN(SS)	2.580	[G/CC]	18052.000	[CPS]
6	Jul02,12	19:44:14	CALIPERL	100.000	[MM]	236854.000	[CPS]
	Jul02,12	19:44:14	CALIPERL	200.000	[MM]	339407.000	[CPS]
7	Jun02,12	16:20:44	CURRENT	23.000	[UA]	2925.000	[CPS]
	Jun02,12	16:20:44	CURRENT	225.000	[UA]	18770.000	[CPS]
8	Jun02,12	16:00:49	F	Default	[CPS]		
9	Jun02,12	16:00:49	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-02B
DATE OF LOG: 08/22/12
PROBE: 9058A 2631

MAG DECL: 15.0

SCALE: 10 M/CM
TRUE DEPTH: 120.24 M
AZIMUTH: 60.8
DISTANCE: 75.5 M
+ = 10 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY GEO
DATA FROM : N/A
MAG. DECL. : 15.000
HOLE ID. : CM11-02B
DATE OF LOG : 08/22/12
PROBE : 9058A , 2631
DEPTH UNITS : METERS
LOG: CM11-02B_08-22-12_00-42_9058A_.02_5.00_143.00_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
5.00	5.00	0.01	0.01	0.0	61.3	38.0	61.3
6.00	5.76	0.39	0.53	0.7	53.9	40.2	56.1
7.00	6.52	0.75	1.07	1.3	54.8	40.6	56.3
8.00	7.28	1.10	1.61	2.0	55.5	37.1	61.5
9.00	8.05	1.45	2.15	2.6	56.0	40.0	55.8
10.00	8.82	1.78	2.69	3.2	56.4	39.5	58.9
11.00	9.60	2.12	3.23	3.9	56.7	39.7	58.2
12.00	10.37	2.45	3.76	4.5	56.9	39.1	59.5
13.00	11.14	2.78	4.30	5.1	57.1	38.9	60.0
14.00	11.92	3.11	4.84	5.8	57.3	39.1	56.0
15.00	12.70	3.44	5.37	6.4	57.4	38.9	58.9
16.00	13.48	3.76	5.91	7.0	57.5	38.6	57.2
17.00	14.27	4.09	6.44	7.6	57.6	38.1	58.6
18.00	15.05	4.41	6.96	8.2	57.7	38.0	58.4
19.00	15.84	4.73	7.49	8.9	57.7	37.8	59.1
20.00	16.63	5.04	8.01	9.5	57.8	37.4	58.8
21.00	17.43	5.35	8.53	10.1	57.9	37.2	58.7
22.00	18.23	5.67	9.04	10.7	57.9	37.0	58.8
23.00	19.03	5.98	9.56	11.3	58.0	36.8	59.2
24.00	19.83	6.29	10.07	11.9	58.0	36.6	58.9
25.00	20.63	6.60	10.58	12.5	58.0	36.5	58.7
26.00	21.44	6.91	11.08	13.1	58.1	36.4	58.8
27.00	22.24	7.21	11.59	13.7	58.1	36.2	58.3
28.00	23.05	7.52	12.09	14.2	58.1	36.0	59.2
29.00	23.86	7.83	12.59	14.8	58.1	35.8	58.3
30.00	24.67	8.13	13.09	15.4	58.2	35.6	58.0
31.00	25.49	8.44	13.59	16.0	58.2	35.5	58.2
32.00	26.30	8.74	14.08	16.6	58.2	35.3	58.6
33.00	27.12	9.04	14.57	17.1	58.2	35.2	58.3
34.00	27.94	9.35	15.06	17.7	58.2	35.0	57.9
35.00	28.76	9.65	15.55	18.3	58.2	34.6	58.7
36.00	29.58	9.94	16.03	18.9	58.2	34.7	58.8
37.00	30.40	10.24	16.51	19.4	58.2	34.5	58.1
38.00	31.23	10.53	17.00	20.0	58.2	34.3	58.7
39.00	32.06	10.82	17.48	20.6	58.2	34.1	58.5
40.00	32.89	11.11	17.96	21.1	58.3	33.8	59.6
41.00	33.72	11.40	18.43	21.7	58.3	33.4	61.1
42.00	34.55	11.68	18.91	22.2	58.3	33.4	58.7
43.00	35.38	11.97	19.38	22.8	58.3	33.9	57.8
44.00	36.21	12.25	19.86	23.3	58.3	31.6	61.5
45.00	37.05	12.53	20.33	23.9	58.3	33.0	60.9
46.00	37.89	12.82	20.80	24.4	58.4	32.9	59.2
47.00	38.72	13.10	21.26	25.0	58.4	33.2	59.0
48.00	39.56	13.38	21.73	25.5	58.4	33.2	58.5
49.00	40.40	13.66	22.20	26.1	58.4	33.2	58.8
50.00	41.24	13.94	22.67	26.6	58.4	32.3	61.5
51.00	42.08	14.21	23.13	27.2	58.4	31.9	62.5
52.00	42.92	14.49	23.60	27.7	58.4	32.7	59.1
53.00	43.76	14.76	24.06	28.2	58.5	32.8	58.6
54.00	44.61	15.03	24.53	28.8	58.5	32.6	58.6
55.00	45.45	15.30	24.99	29.3	58.5	31.9	60.3
56.00	46.30	15.57	25.45	29.8	58.5	32.1	59.9
57.00	47.15	15.84	25.90	30.4	58.5	31.9	59.2
58.00	48.00	16.11	26.36	30.9	58.6	31.3	60.0
59.00	48.84	16.38	26.81	31.4	58.6	32.4	57.9
60.00	49.69	16.66	27.26	31.9	58.6	30.5	62.6
61.00	50.54	16.93	27.71	32.5	58.6	32.9	58.4
62.00	51.38	17.22	28.17	33.0	58.6	32.7	63.8
63.00	52.23	17.49	28.63	33.5	58.6	31.9	59.2
64.00	53.07	17.76	29.09	34.1	58.6	32.2	58.3
65.00	53.92	18.04	29.54	34.6	58.6	29.6	65.3
66.00	54.77	18.32	30.00	35.1	58.6	32.3	59.3
67.00	55.61	18.60	30.45	35.7	58.6	32.1	58.4
68.00	56.46	18.88	30.90	36.2	58.6	32.6	56.9
69.00	57.30	19.16	31.36	36.7	58.6	32.1	56.6
70.00	58.15	19.44	31.81	37.3	58.6	32.8	59.2
71.00	58.99	19.72	32.27	37.8	58.6	32.3	57.9
72.00	59.84	20.00	32.72	38.3	58.6	32.3	58.4
73.00	60.68	20.27	33.18	38.9	58.6	32.3	58.9
74.00	61.53	20.55	33.64	39.4	58.6	32.3	58.5
75.00	62.37	20.83	34.09	40.0	58.6	32.3	58.5
76.00	63.22	21.10	34.55	40.5	58.6	32.3	59.7
77.00	64.07	21.38	35.01	41.0	58.6	32.2	59.6
78.00	64.91	21.65	35.47	41.5	58.6	32.4	59.5
79.00	65.76	21.92	35.92	42.1	58.6	32.6	60.3
80.00	66.60	22.19	36.38	42.6	58.6	33.0	58.4
81.00	67.45	22.47	36.84	43.2	58.6	32.4	59.1
82.00	68.29	22.73	37.31	43.7	58.6	32.4	60.0
83.00	69.14	23.00	37.77	44.2	58.7	32.0	60.0
84.00	69.98	23.27	38.23	44.8	58.7	32.3	59.8
85.00	70.83	23.54	38.69	45.3	58.7	32.4	60.9
86.00	71.67	23.80	39.16	45.8	58.7	32.3	60.3
87.00	72.52	24.06	39.62	46.4	58.7	32.4	60.7
88.00	73.36	24.32	40.09	46.9	58.8	32.3	60.7
89.00	74.21	24.58	40.56	47.4	58.8	32.3	61.1
90.00	75.05	24.84	41.02	48.0	58.8	32.3	61.1
91.00	75.90	25.10	41.49	48.5	58.8	32.2	61.4
92.00	76.75	25.36	41.96	49.0	58.9	32.2	61.8
93.00	77.59	25.61	42.43	49.6	58.9	32.2	61.6
94.00	78.44	25.86	42.89	50.1	58.9	32.2	61.8
95.00	79.29	26.12	43.36	50.6	58.9	32.3	61.1
96.00	80.13	26.37	43.83	51.2	59.0	32.2	62.0
97.00	80.98	26.62	44.30	51.7	59.0	32.2	61.6
98.00	81.83	26.87	44.77	52.2	59.0	32.0	62.3
99.00	82.67	27.12	45.24	52.7	59.1	32.0	62.4
100.00	83.52	27.37	45.71	53.3	59.1	32.5	61.6
101.00	84.37	27.61	46.18	53.8	59.1	30.6	65.5
102.00	85.21	27.86	46.65	54.3	59.2	32.3	62.7
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104.00	86.91	28.35	47.60	55.4	59.2	32.1	62.8
105.00	87.76	28.59	48.07	55.9	59.3	31.9	62.9
106.00	88.60	28.83	48.54	56.5	59.3	31.9	63.0
107.00	89.45	29.07	49.01	57.0	59.3	31.8	63.2
108.00	90.30	29.31	49.48	57.5	59.4	32.1	60.9
109.00	91.15	29.54	49.95	58.0	59.4	32.4	63.6
110.00	92.00	29.78	50.42	58.6	59.4	31.9	63.8
111.00	92.85	30.01	50.90	59.1	59.5	31.7	63.2
112.00	93.70	30.24	51.37	59.6	59.5	31.7	63.5
113.00	94.55	30.47	51.85	60.1	59.6	31.6	64.3
114.00	95.40	30.69	52.32	60.7	59.6	32.2	63.6
115.00	96.25	30.92	52.79	61.2	59.6	31.8	65.9
116.00	97.10	31.14	53.27	61.7	59.7	32.0	64.5
117.00	97.95	31.37	53.75	62.2	59.7	31.7	64.8
118.00	98.80	31.59	54.22	62.8	59.8	31.8	65.5
119.00	99.65	31.81	54.70	63.3	59.8	31.7	65.0
120.00	100.51	32.03	55.17	63.8	59.9	31.6	63.5
121.00	101.36	32.25	55.65	64.3	59.9	32.5	63.4
122.00	102.21	32.47	56.12	64.8	59.9	31.7	65.1
123.00	103.06	32.69	56.60	65.4	60.0	31.5	65.9
124.00	103.92	32.91	57.07	65.9	60.0	31.3	64.9
125.00	104.77	33.12	57.54	66.4	60.1	31.2	64.7
126.00	105.63	33.33	58.02	66.9	60.1	31.0	66.6
127.00	106.48	33.55	58.49	67.4	60.2	31.3	65.8
128.00	107.34	33.75	58.96	67.9	60.2	31.0	66.2
129.00	108.20	33.96	59.43	68.5	60.3	31.1	65.7
130.00	109.05	34.17	59.90	69.0	60.3	30.9	66.4
131.00	109.91	34.38	60.37	69.5	60.3	31.5	66.1
132.00	110.77	34.59	60.84	70.0	60.4	30.7	67.1
133.00	111.62	34.81	61.31	70.5	60.4	30.8	66.5
134.00	112.48	35.01	61.78	71.0	60.5	30.8	65.6
135.00	113.34	35.22	62.24	71.5	60.5	30.9	64.4
136.00	114.21	35.43	62.70	72.0	60.5	30.5	66.7
137.00	115.07	35.63	63.17	72.5	60.6	30.5	66.3
138.00	115.93	35.84	63.63	73.0	60.6	31.6	62.9
139.00	116.80	36.04	64.09	73.5	60.6	30.3	66.8
140.00	117.66	36.25	64.55	74.0	60.7	30.9	65.2
141.00	118.52	36.46	65.01	74.5	60.7	29.7	68.3
142.00	119.38	36.67	65.46	75.0	60.7	30.5	66.9
143.00	120.21	36.87	65.91	75.5	60.8	30.5	64.3
143.00	120.21	36.87	65.91	75.5	60.8	30.5	64.3

Century WIRELINE SERVICES

GAMMA - NEUTRON THROUGH RODS CM11-02B

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-02B
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:BRITISH COLUMBIA

OTHER SERVICES:
DEN
DEV
DEN TR

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

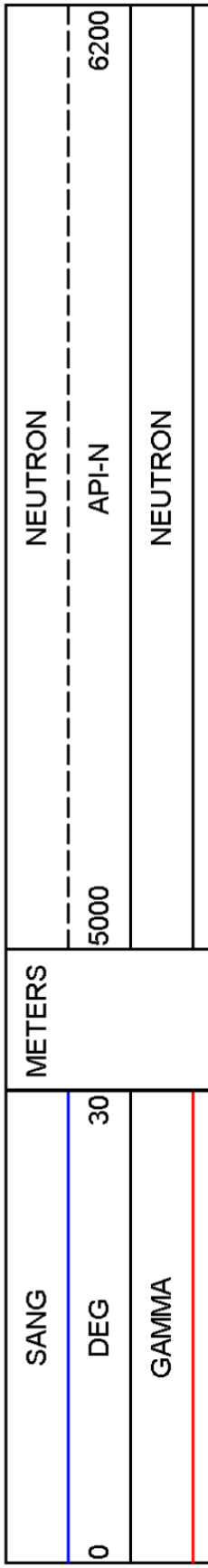
DATE	:08/21/12	RIG NUMBER	:GED
DEPTH DRILLER	:144.00	LOGGER TD	:144.20
BIT SIZE	:120.65	ARRIVAL TIME	:20:30
LOG TOP	:0.00	DEPARTURE TIME	:02:30
LOG BOTTOM	:139.53	CIRC STOPPED	:N/A
CASING LOGGER	:2.85		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:M. ESKRICK		
RECORDED BY	:M. LEBEDA		
REMARKS 1	:AZIMUTH: 65, ANGLE: 50		
REMARKS 2	:PIPE SET @ 139.6M		

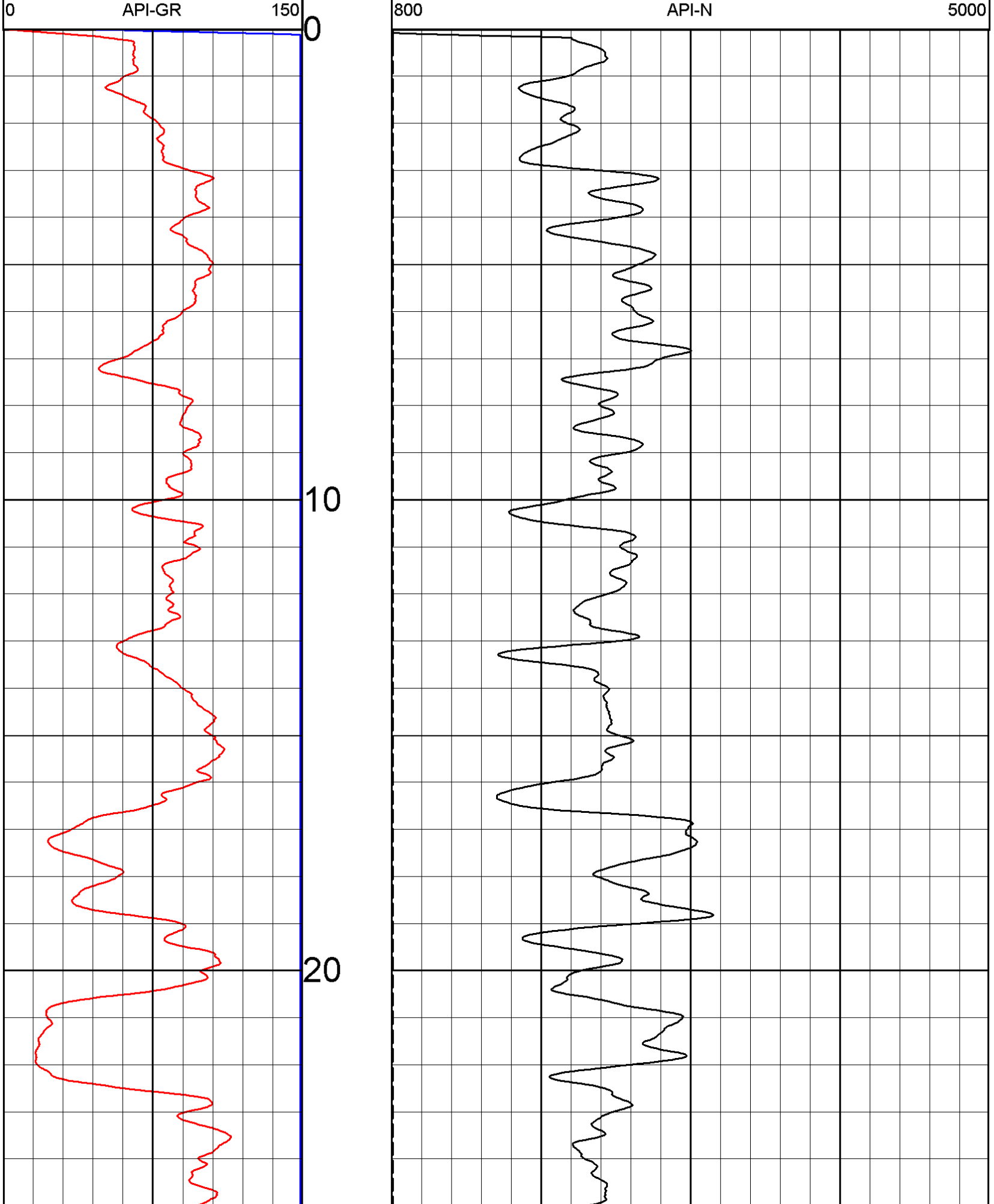
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAMMA NEUTRON TR 1:100 CM11-02B 08/21/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 35.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR-TOP.0 08/22/2012		VERSION = 3.64KF	

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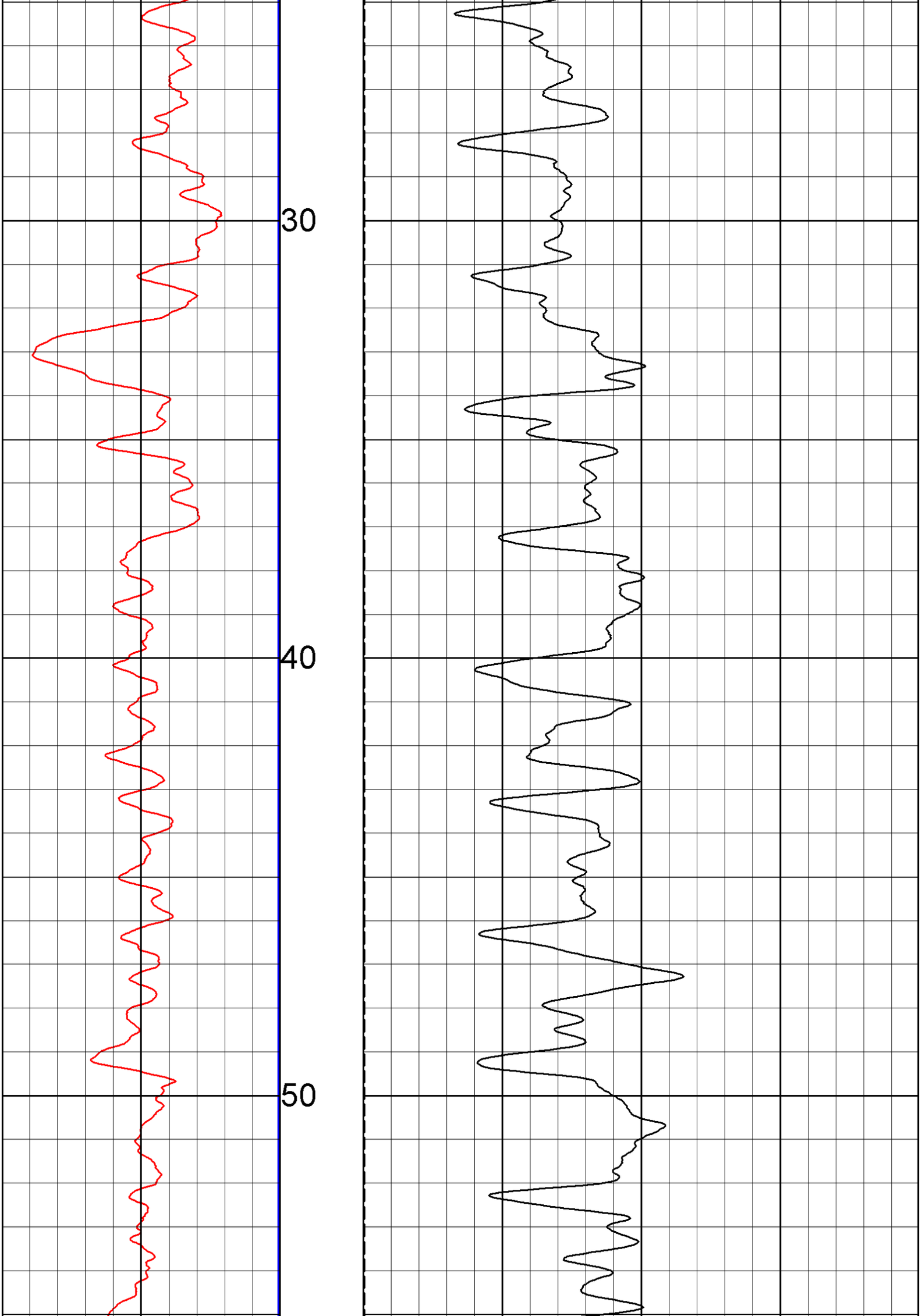
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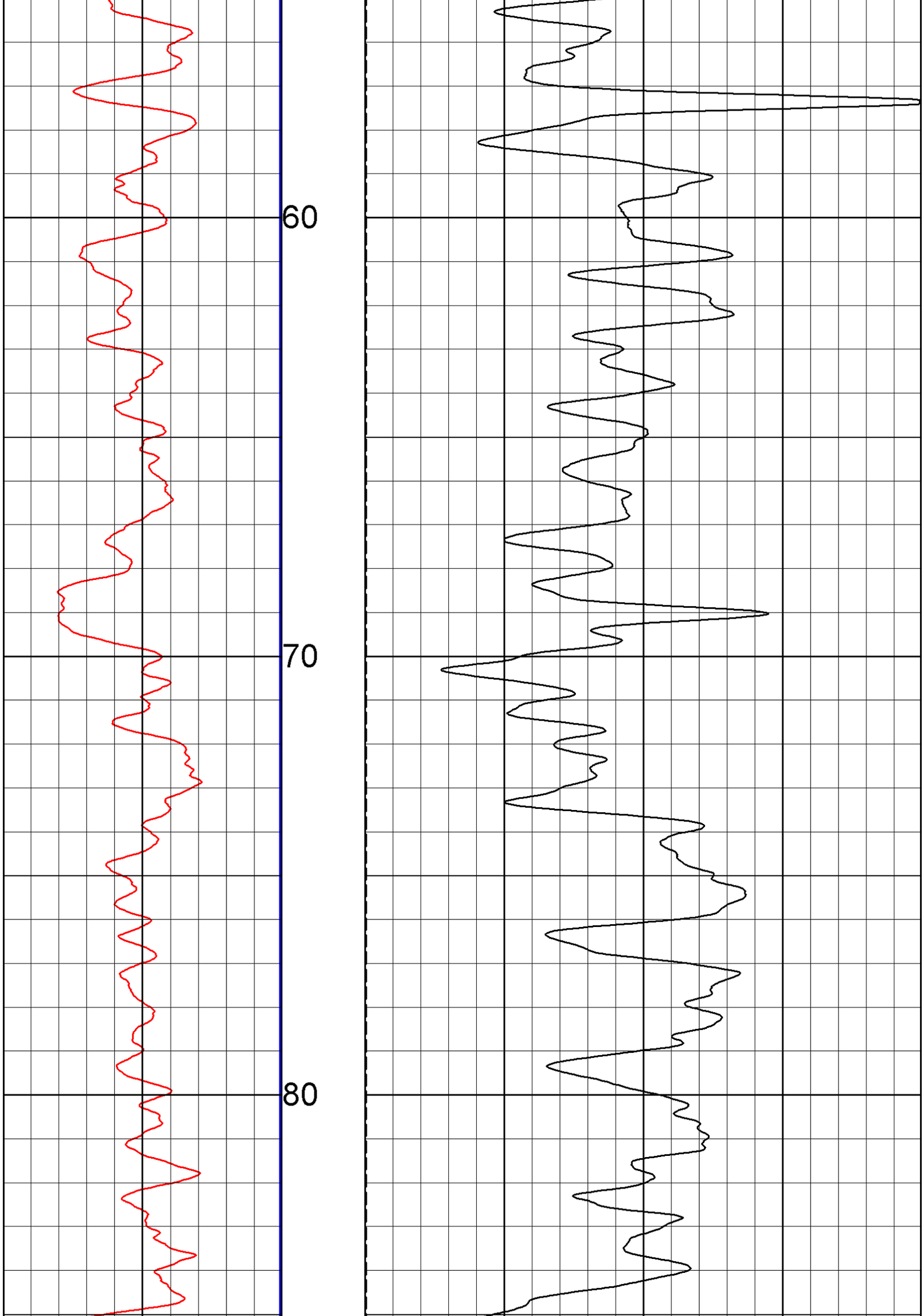
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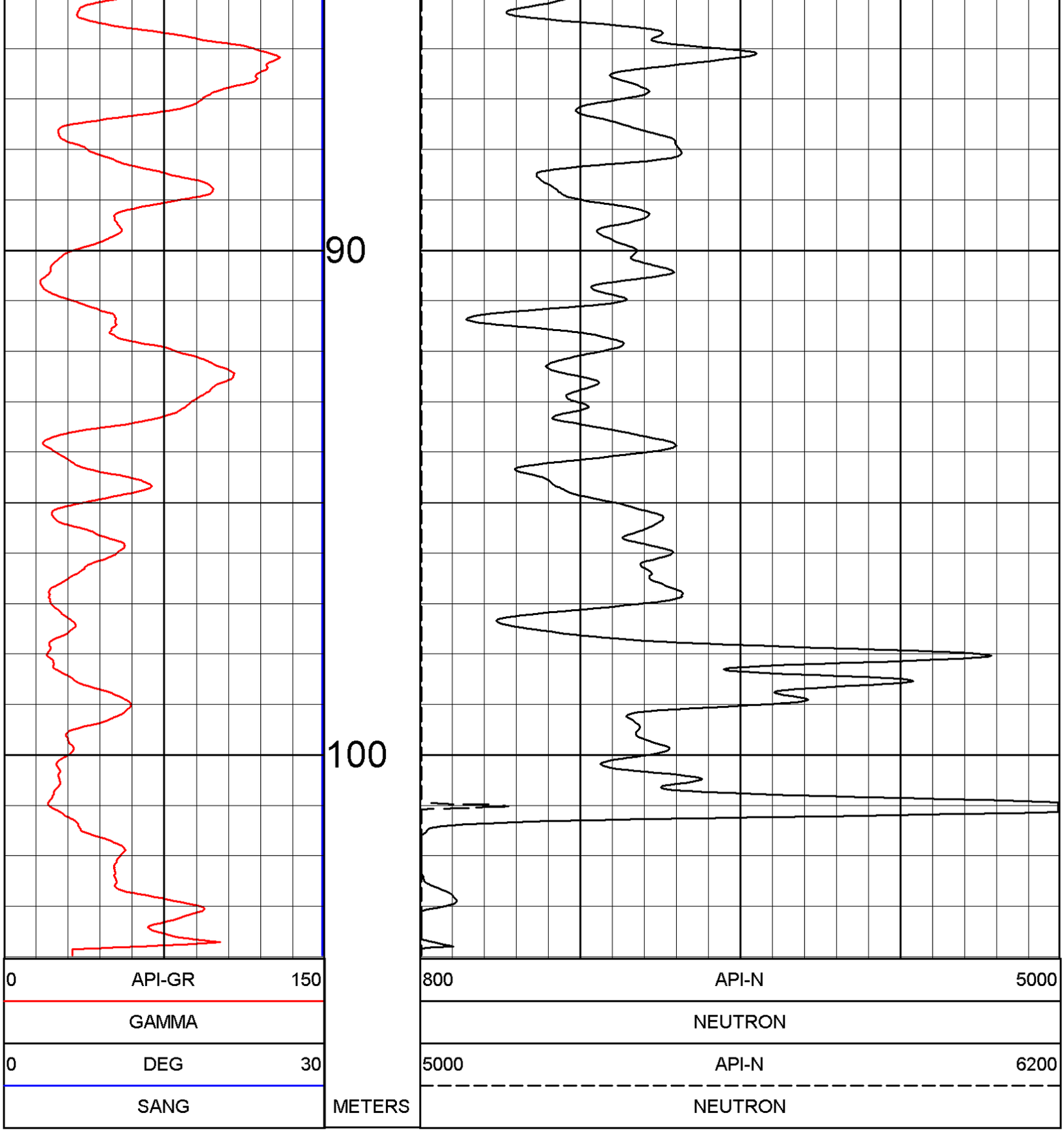


GAMMA NEUTRON TR 1:100 CM11-02B 08/21/12

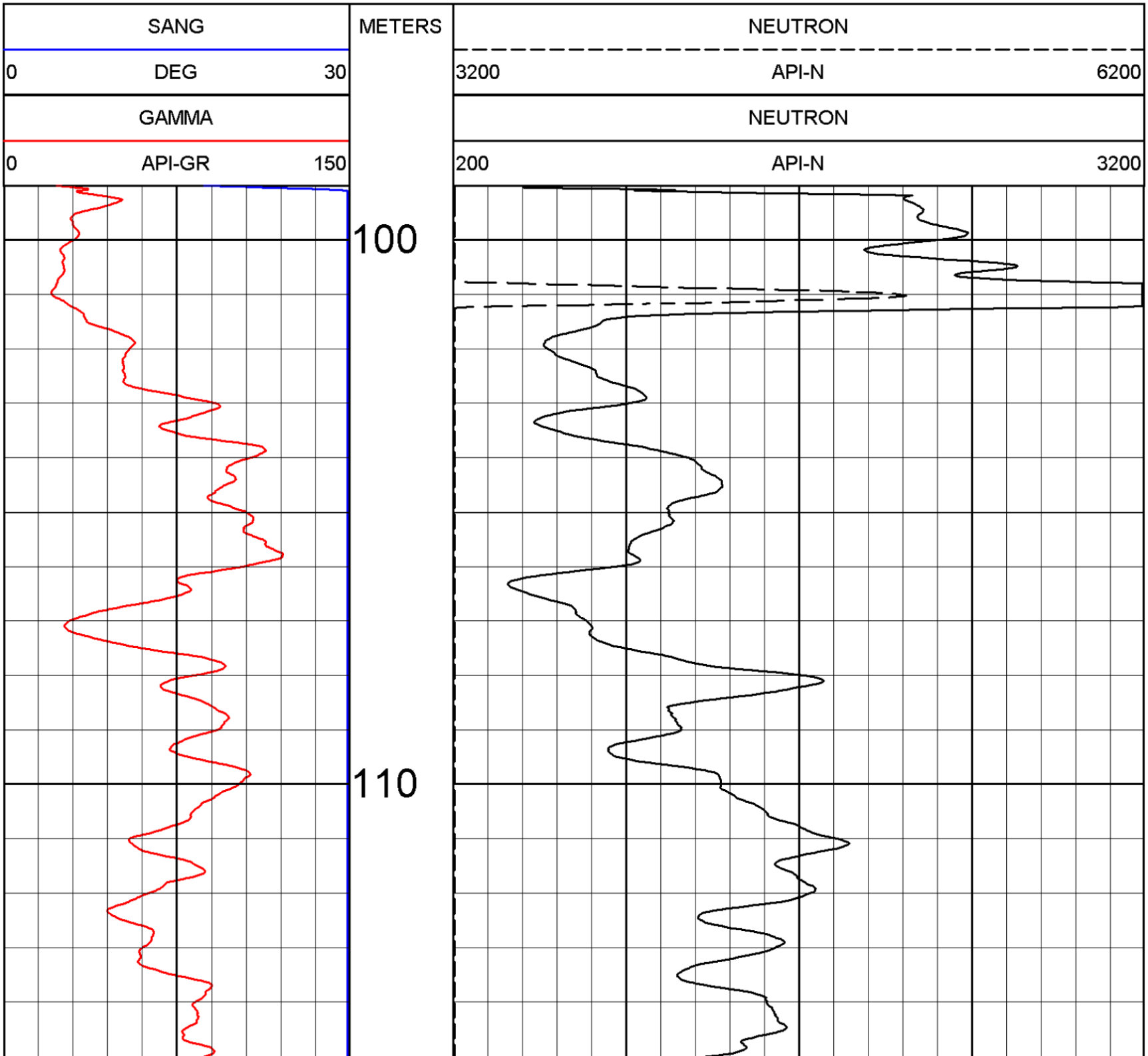
LOG PARAMETERS

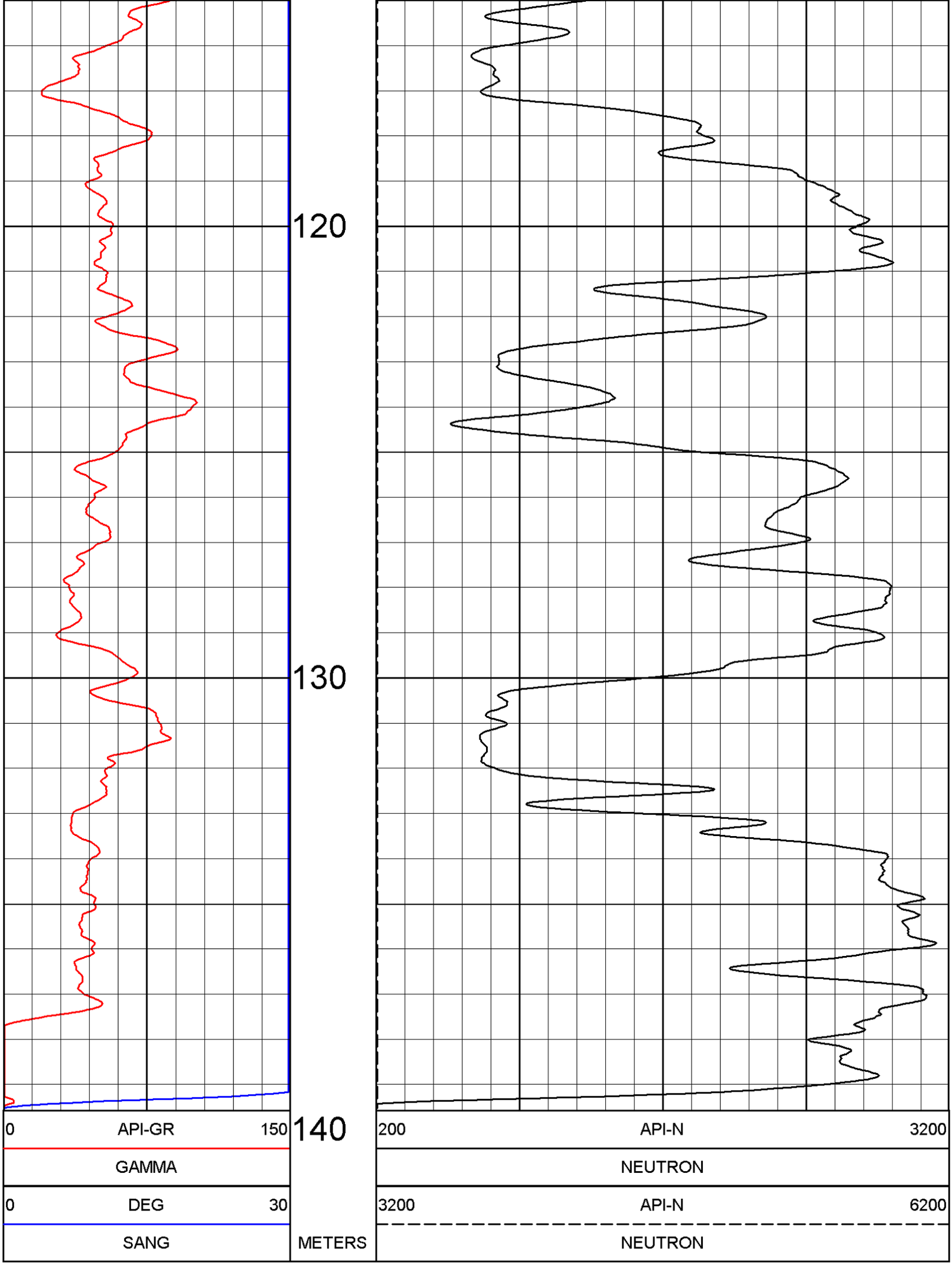
MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 35.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR-TOP.0 08/22/2012		VERSION = 3.64KF

GAMMA NEUTRON TR 1:100 CM11-02B 08/21/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 35.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/22/2012		VERSION = 3.64KF




120
130
140
0
API-GR
150
GAMMA
0
DEG
30
SANG
METERS
200
API-N
3200
NEUTRON
3200
API-N
6200
NEUTRON

GAMMA NEUTRON TR 1:100 CM11-02B 08/21/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 35.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/22/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-02B 08/21/12 21:54
TOOL 9058A TM VERSION 3
SERIAL NUMBER 2631

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	May15,12	10:05:16	GAMMA	0.000	[API-GR]	3.000	[CPS]
	May15,12	10:05:16	GAMMA	545.000	[API-GR]	560.000	[CPS]
2	Jan19,12	10:47:24	TEMP	3.500	[DEG_F]	330443.000	[CPS]
	Jan19,12	10:47:24	TEMP	51.000	[DEG_F]	396853.000	[CPS]
3	May15,12	10:19:19	NEUTROI	Default	[CPS]	Default	[CPS]
	May15,12	10:19:19	NEUTRC	271.000	[API-N]	94.000	[CPS]
4	May16,11	09:08:18	POR(NEI	100.000	[PERCENT]	35.000	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-03A

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-03A
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA
LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

PERMANENT DATUM	:GL
LOG MEASURED FROM	:GL
DRL MEASURED FROM	:GL
ELEVATION KB	:N/A
ELEVATION DF	:N/A
ELEVATION GL	:N/A

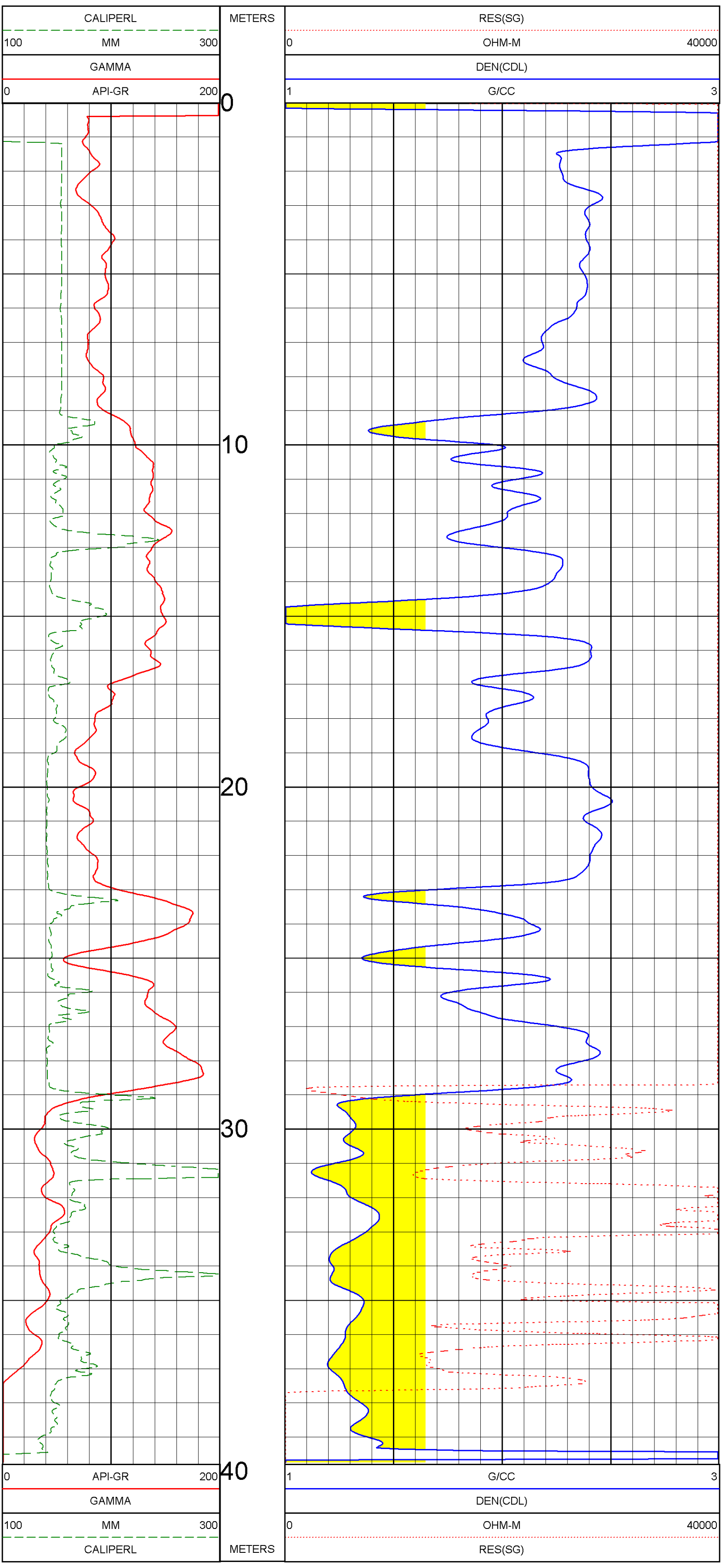
DATE	:08/20/12
DEPTH DRILLER	:186.00
BIT SIZE	:120.65
LOG TOP	:0.00
LOG BOTTOM	:39.76
CASING LOGGER	:9.00
CASING DRILLER	:9.00
CASING TYPE	:SURFACE
BOREHOLE FLUID	:WATER
RM TEMPERATURE	:N/A
MUD RES	:N/A
MUD WEIGHT	:1.00
WITNESSED BY	:NORWEST
RECORDED BY	:A.SPASKYY
REMARKS 1	:HOLE BRIDGED AT 39.90M
REMARKS 2	:
RIG NUMBER	:GED
LOGGER TD	:39.90
ARRIVAL TIME	:01:30
DEPARTURE TIME	:07:30
CIRC STOPPED	:NA

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DENSITY 1:100 CM11-03A 08/20/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 35.00 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/19/2012 VERSION = 3.64KF



DENSITY 1:100 CM11-03A 08/20/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 35.00 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/19/2012 VERSION = 3.64KF

TOOL CALIBRATION CM11-03A 08/20/12 06:45
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

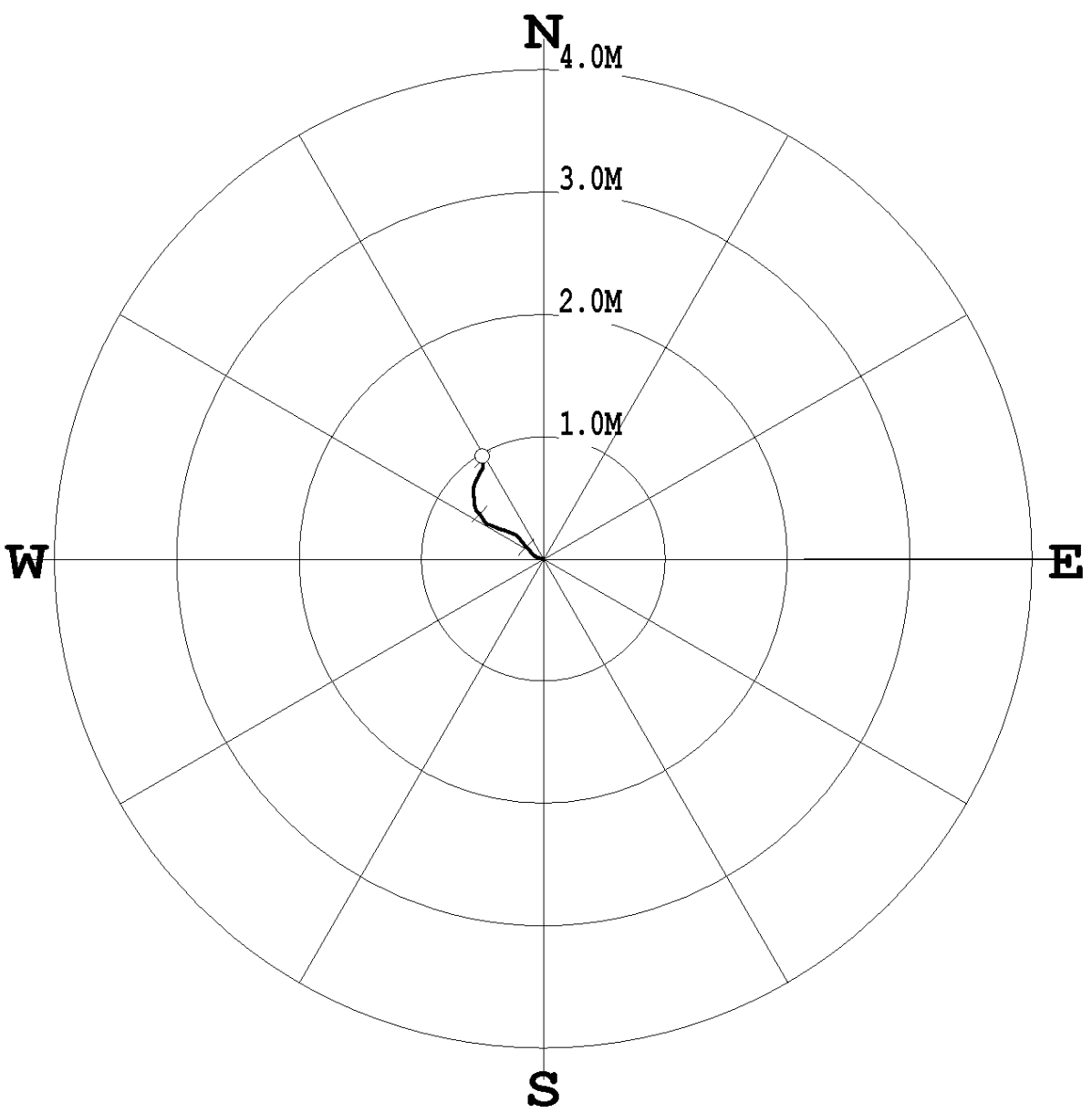
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-03A
DATE OF LOG: 08/20/12
PROBE: 9055A 59

MAG DECL: 35.0

SCALE: 1 M/CM
TRUE DEPTH: 60.51 M
AZIMUTH: 329.4
DISTANCE: 1.0 M
+ = 20 M INCR
○ = BOTTOM OF HOLE



* * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM11-03A
FIELD OFFICE : CENTURY GEO DATE OF LOG : 08/20/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 35.000 DEPTH UNITS : METERS
LOG: CM11-03A_08-20-12_06-22_9055A_.02_12.00_60.52_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
12.02	12.02	0.00	-0.00	0.0	274.0	1.0	274.0
13.00	13.00	0.01	-0.02	0.0	285.5	1.3	288.5
14.00	14.00	0.01	-0.04	0.0	287.0	1.3	292.8
15.00	15.00	0.02	-0.06	0.1	285.7	1.2	309.0
16.00	16.00	0.03	-0.08	0.1	291.2	1.4	317.9
17.00	17.00	0.05	-0.10	0.1	296.7	1.5	321.9
18.00	18.00	0.07	-0.11	0.1	301.0	1.2	328.3
19.00	19.00	0.08	-0.13	0.2	303.9	1.3	315.6
20.00	20.00	0.10	-0.14	0.2	305.4	1.3	315.9
21.00	21.00	0.12	-0.16	0.2	307.0	1.4	322.6
22.00	22.00	0.14	-0.17	0.2	308.5	1.3	326.3
23.00	23.00	0.16	-0.19	0.2	309.8	1.2	341.9
24.00	24.00	0.17	-0.20	0.3	310.7	1.6	313.7
25.00	25.00	0.19	-0.22	0.3	311.5	1.8	325.3
26.00	26.00	0.20	-0.24	0.3	310.4	1.7	287.0
27.00	27.00	0.22	-0.27	0.3	309.0	1.7	295.1
28.00	28.00	0.23	-0.29	0.4	307.5	1.5	288.7
29.00	28.99	0.24	-0.32	0.4	306.5	1.5	285.2
30.00	29.99	0.24	-0.34	0.4	305.1	1.2	284.0
31.00	30.99	0.25	-0.37	0.4	304.3	1.4	295.4
32.00	31.99	0.26	-0.39	0.5	303.7	1.3	287.6
33.00	32.99	0.27	-0.41	0.5	303.2	1.4	281.4
34.00	33.99	0.28	-0.43	0.5	302.7	1.2	293.4
35.00	34.99	0.28	-0.45	0.5	302.2	0.7	283.7
36.00	35.99	0.29	-0.46	0.5	301.9	1.1	288.3
37.00	36.99	0.30	-0.48	0.6	302.3	1.4	319.0
38.00	37.99	0.33	-0.50	0.6	303.5	1.6	314.5
39.00	38.99	0.35	-0.51	0.6	304.4	1.7	318.7
40.00	39.99	0.37	-0.52	0.6	305.4	1.0	322.2
41.00	40.99	0.39	-0.54	0.7	305.5	1.7	314.0
42.00	41.99	0.41	-0.56	0.7	306.3	1.9	345.7
43.00	42.99	0.44	-0.56	0.7	307.8	2.4	355.9
44.00	43.99	0.46	-0.57	0.7	309.1	1.4	355.1
45.00	44.99	0.49	-0.57	0.7	310.5	1.4	10.2
46.00	45.99	0.51	-0.57	0.8	311.9	1.5	342.9
47.00	46.99	0.54	-0.58	0.8	313.2	1.4	359.2
48.00	47.99	0.56	-0.57	0.8	314.4	1.2	3.3
49.00	48.99	0.59	-0.57	0.8	315.7	1.1	8.0
50.00	49.99	0.61	-0.57	0.8	316.9	1.3	15.2
51.00	50.99	0.63	-0.56	0.8	318.2	1.1	20.6
52.00	51.99	0.64	-0.55	0.8	319.3	1.1	20.6
53.00	52.99	0.66	-0.54	0.9	320.5	1.3	29.5
54.00	53.99	0.68	-0.53	0.9	321.9	1.4	19.0
55.00	54.99	0.70	-0.52	0.9	323.3	1.4	28.8
56.00	55.99	0.72	-0.51	0.9	324.9	1.4	33.5
57.00	56.99	0.74	-0.49	0.9	326.4	1.9	45.1
58.00	57.99	0.76	-0.49	0.9	327.1	1.3	6.1
59.00	58.99	0.79	-0.50	0.9	327.9	1.8	2.3
60.00	59.99	0.82	-0.50	1.0	328.8	1.8	355.3
60.52	60.47	0.84	-0.50	1.0	329.3	1.9	3.3

Century WIRELINE SERVICES

GAMMA - NEUTRON THROUGH RODS CM11-03A

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-03A
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
DEN
DEV
DEN-TR

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:08/20/12	RIG NUMBER	:GED
DEPTH DRILLER	:186.00	LOGGER TD	:185.00
BIT SIZE	:120.65	ARRIVAL TIME	:01:30
LOG TOP	:0.00	DEPARTURE TIME	:07:30
LOG BOTTOM	:184.91	CIRC STOPPED	:NA
CASING LOGGER	:9.00		
CASING DRILLER	:9.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

NEUTRON THROUGH RODS 1:100 CM11-03A 08/20/12

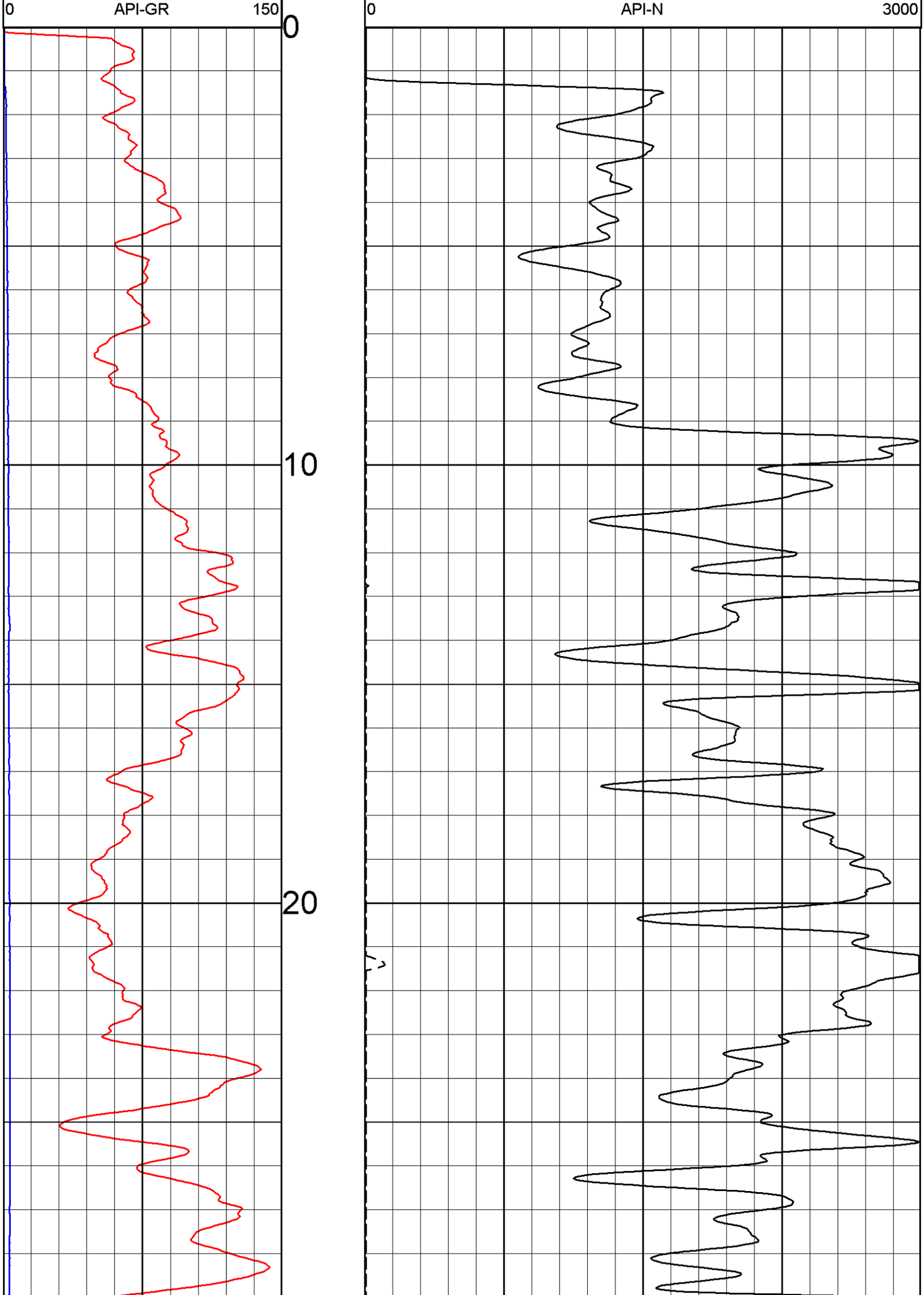
LOG PARAMETERS

MATRIX DENSITY : 2.65
MAGNETIC DECL : 35.00
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/19/2012

NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KF

SANG	METERS	NEUTRON	NEUTRON
0 DEG 60	3000 API-N 6000		
GAMMA		NEUTRON	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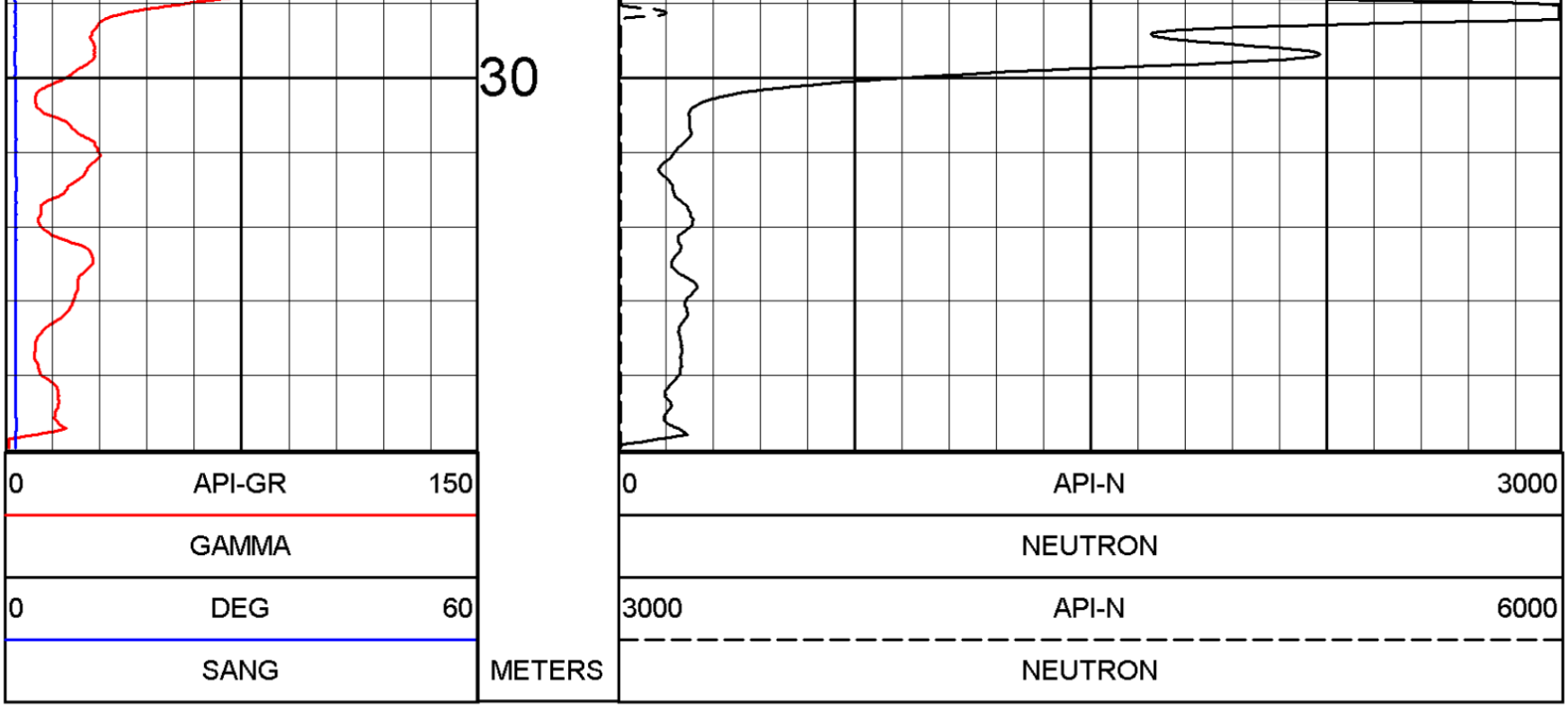
API-GR
150
0
10
20
0
API-N
3000



NEUTRON THROUGH RODS 1:100 CM11-03A 08/20/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177

MAGNETIC DECL : 35.00 ELECT. CUTOFF : 99999 BIT SIZE : 120.65

PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/19/2012 VERSION = 3.64KF

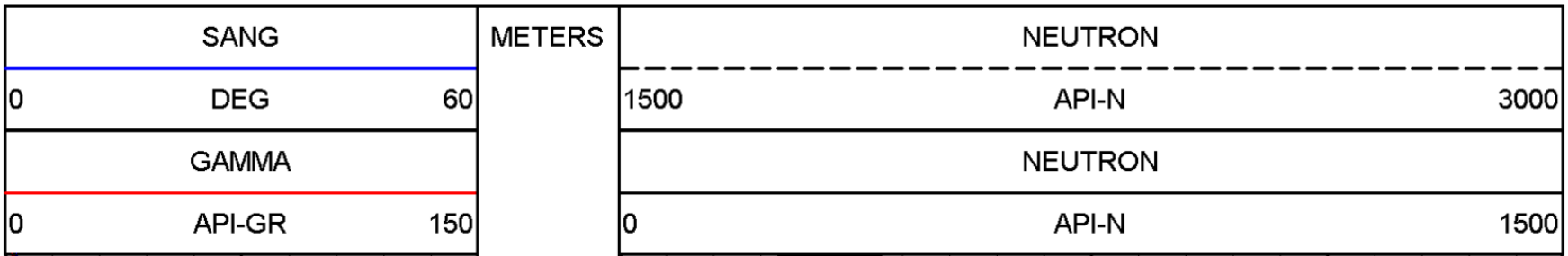
NEUTRON THROUGH RODS 1:100 CM11-03A 08/20/12

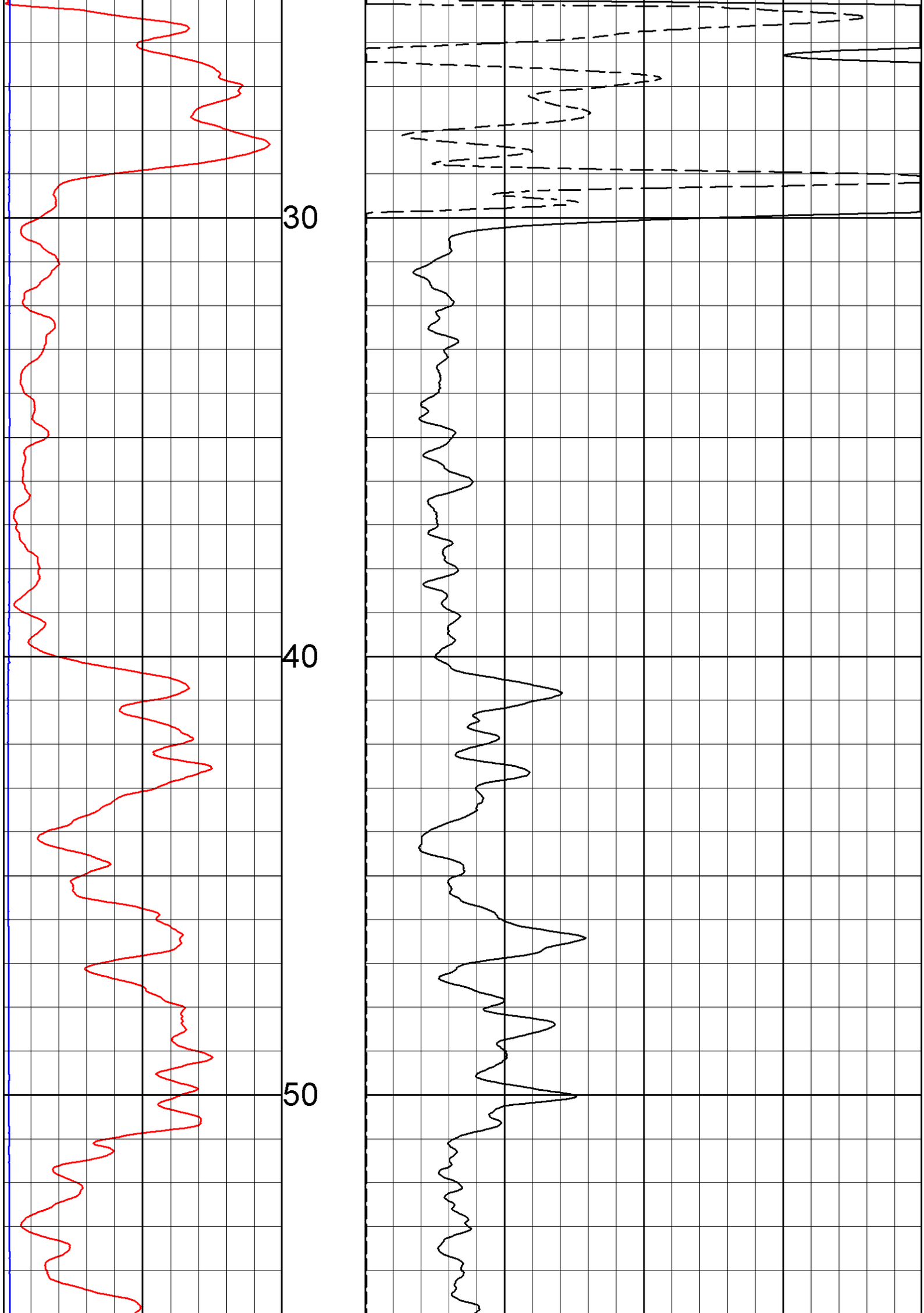
LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177

MAGNETIC DECL : 35.00 ELECT. CUTOFF : 99999 BIT SIZE : 120.65

PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/19/2012 VERSION = 3.64KF

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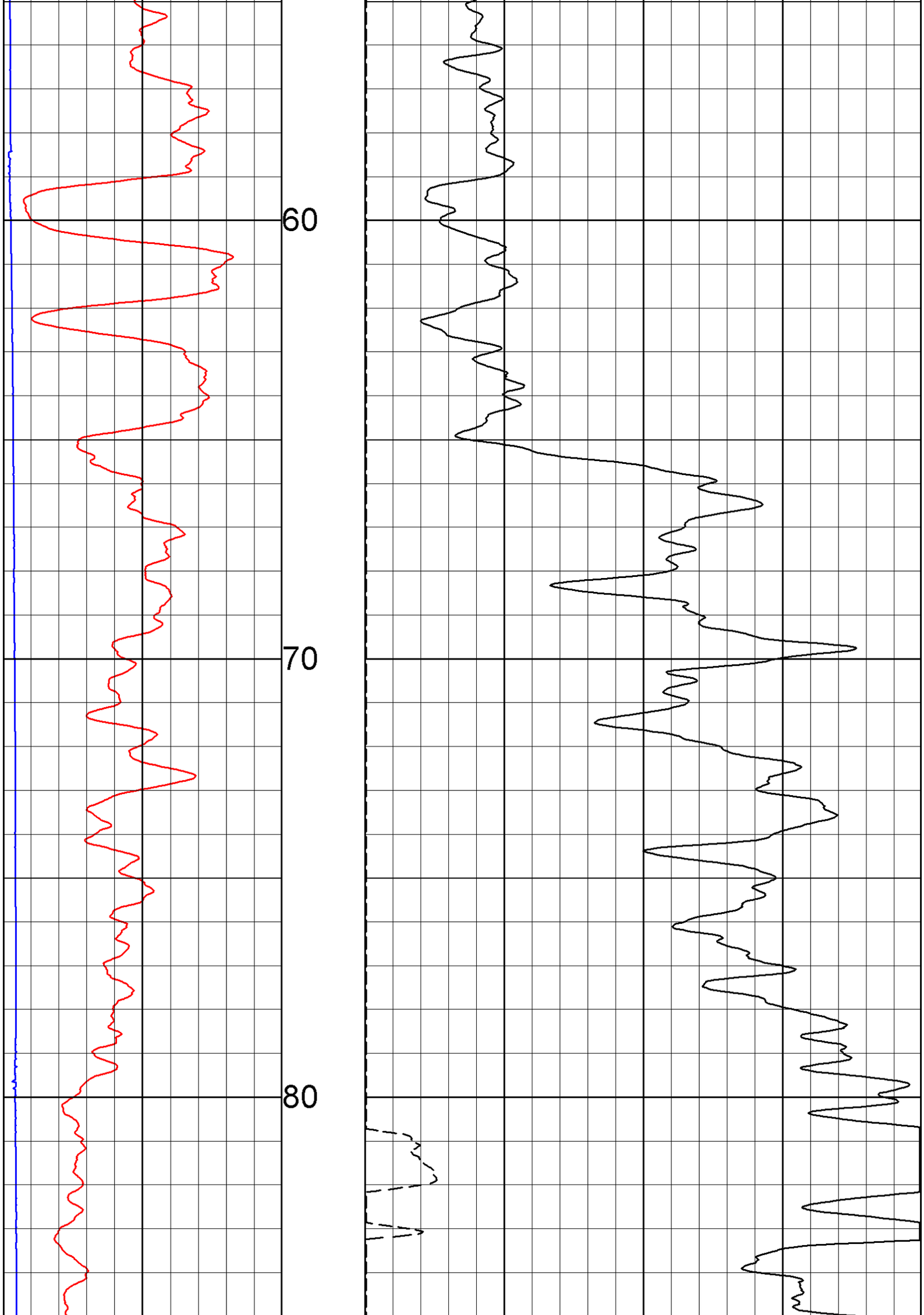
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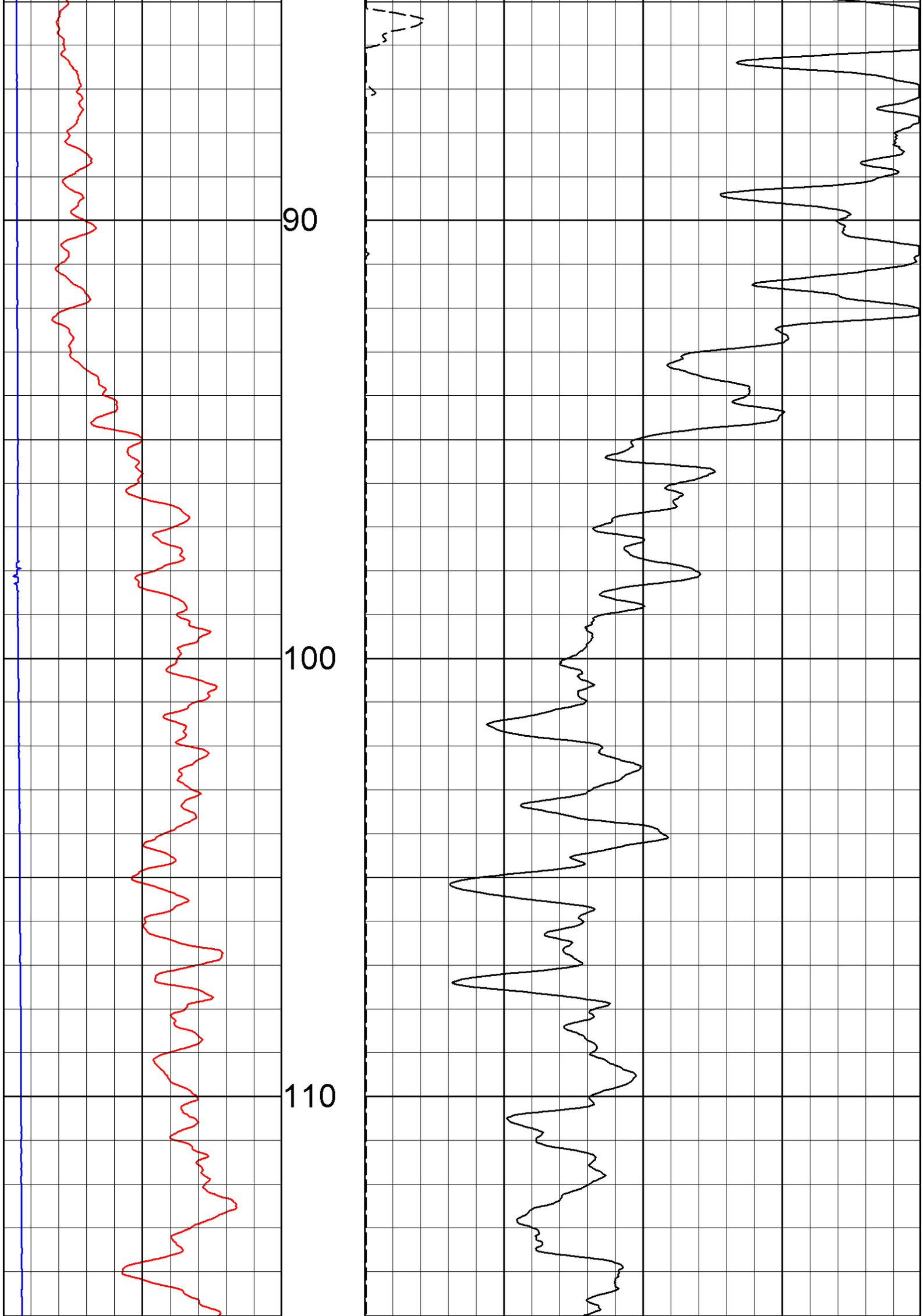
90
100
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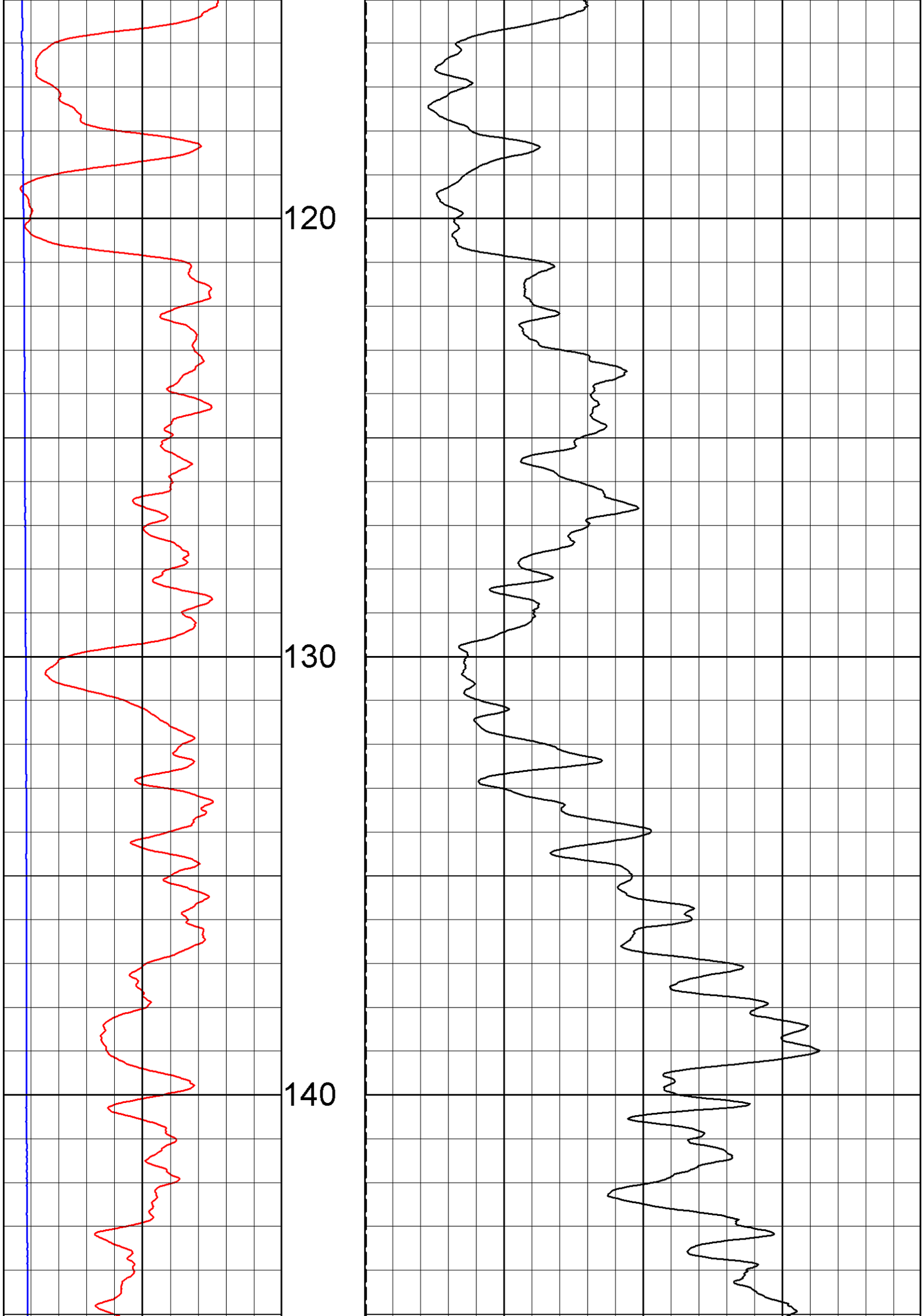
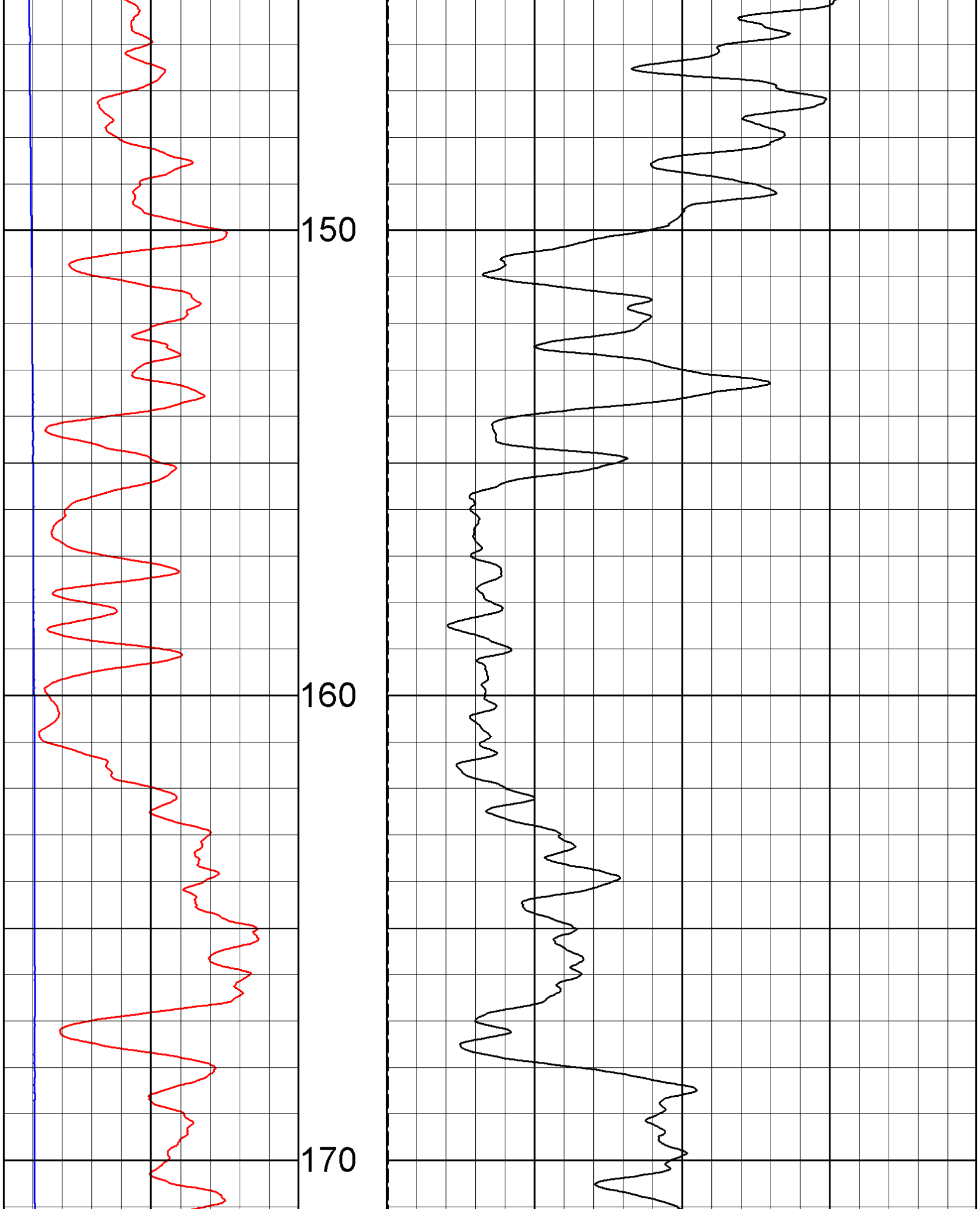

120
130
140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160
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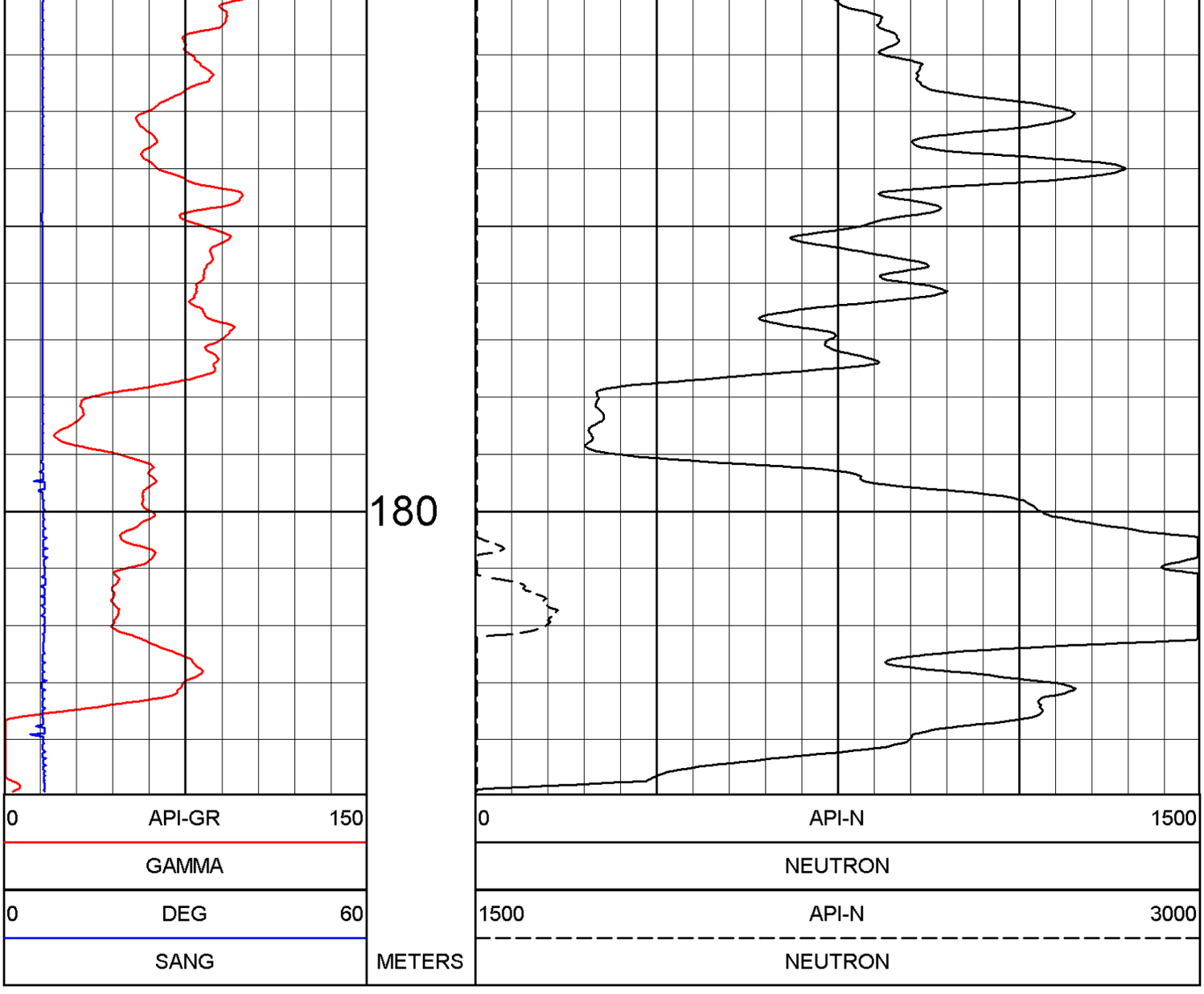


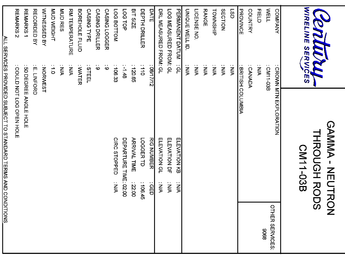
NEUTRON THROUGH RODS 1:100 CM11-03A 08/20/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 35.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/19/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-03A 08/20/12 03:45
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

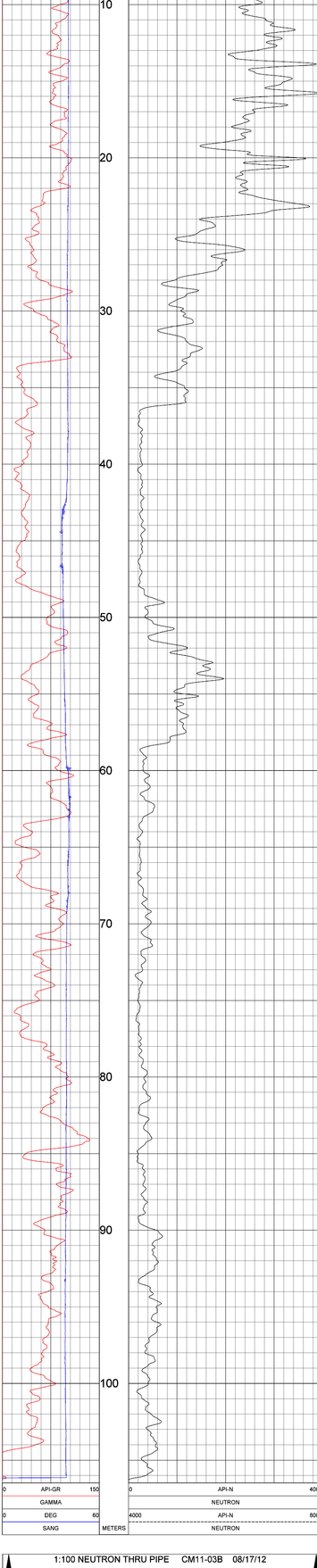
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	POROSIT	Default	[CPS]		
3	May12,08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12,08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04,09	10:40:49	NEUTRON	0.000	[API-N]	1.000	[CPS]
	Dec04,09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]



1:100 NEUTRON THRU PIPE CM11-03B 08/17/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 35	ELECT. CUTOFF : 99000	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/17/2012		VERSION = 3.64KC



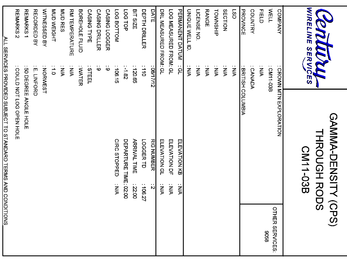
1:100 NEUTRON THRU PIPE CM11-03B 08/17/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 35	ELECT. CUTOFF : 99000	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/17/2012		VERSION = 3.64KC

TOOL CALIBRATION CM11-03B 08/17/12 22:24
TOOL 9058A TM VERSION 3
SERIAL NUMBER 2631

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	May15,12	11:05:16	GAMMA	0.000	[API-GR]	3.000	[CPS]
	May15,12	11:05:16	GAMMA	545.000	[API-GR]	560.000	[CPS]
2	Jan18,12	11:47:24	TEMP	3.500	[DEG_F]	330443.000	[CPS]
	Jan18,12	11:47:24	TEMP	51.000	[DEG_F]	396853.000	[CPS]
3	May15,12	11:19:19	NEUTRON	Default	[CPS]	Default	[CPS]
	May15,12	11:19:19	NEUTRC	271.000	[API-N]	94.000	[CPS]
4	May18,11	10:08:18	POR(NE	100.000	[PERCENT]	35.000	[CPS]


Century
WIRELINE SERVICES
GAMMA-DENSITY (CPS)
THROUGH RODS
CM11-03B
COMPANY
WELL
FIELD
COUNTY
PROVINCE
LOCATION
LOG MEASURED FROM
DRILL MEASURED FROM
PERMANENT DATUM
ELEVATION
ELEVATION OF
LOG MEASURED FROM
DRILL MEASURED FROM
PERMANENT DATUM
ELEVATION
ELEVATION OF
DEPTH DRILLER
DEPTH LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING LOGGER
CASING DRILLER
CASING TYPE
CASING WEIGHT
BIT SIZE
TYPE FLUID
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE
RM @ MEAS TEMP
RMF @ MEAS TEMP
RMC @ MEAS TEMP
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME CIRC STOPPED
TIME LOGGER ON BOTTOM
MAX REC TEMP
EQUIP LOCATION
RECORDED BY
WITNESSED BY
RUN NUMBER
SERVICE ORDER
REMARKS
CENTRALIZERS
TYPE JOINT
RIG NAME
DIRECTION
TOWNSHIP
RANGE
PERMANENT DATUM
LOG MEASURED FROM
DRILL MEASURED FROM
ELEVATION
ELEVATION OF
CM11-03B
CENTRAL ELEVATION
8000
N/A
BEFORE REPEAT SECTION
CM11-03B
N/A
N/A
N/A

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-04

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-04
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA
LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

OTHER SERVICES:
SLM.DEN
NEU

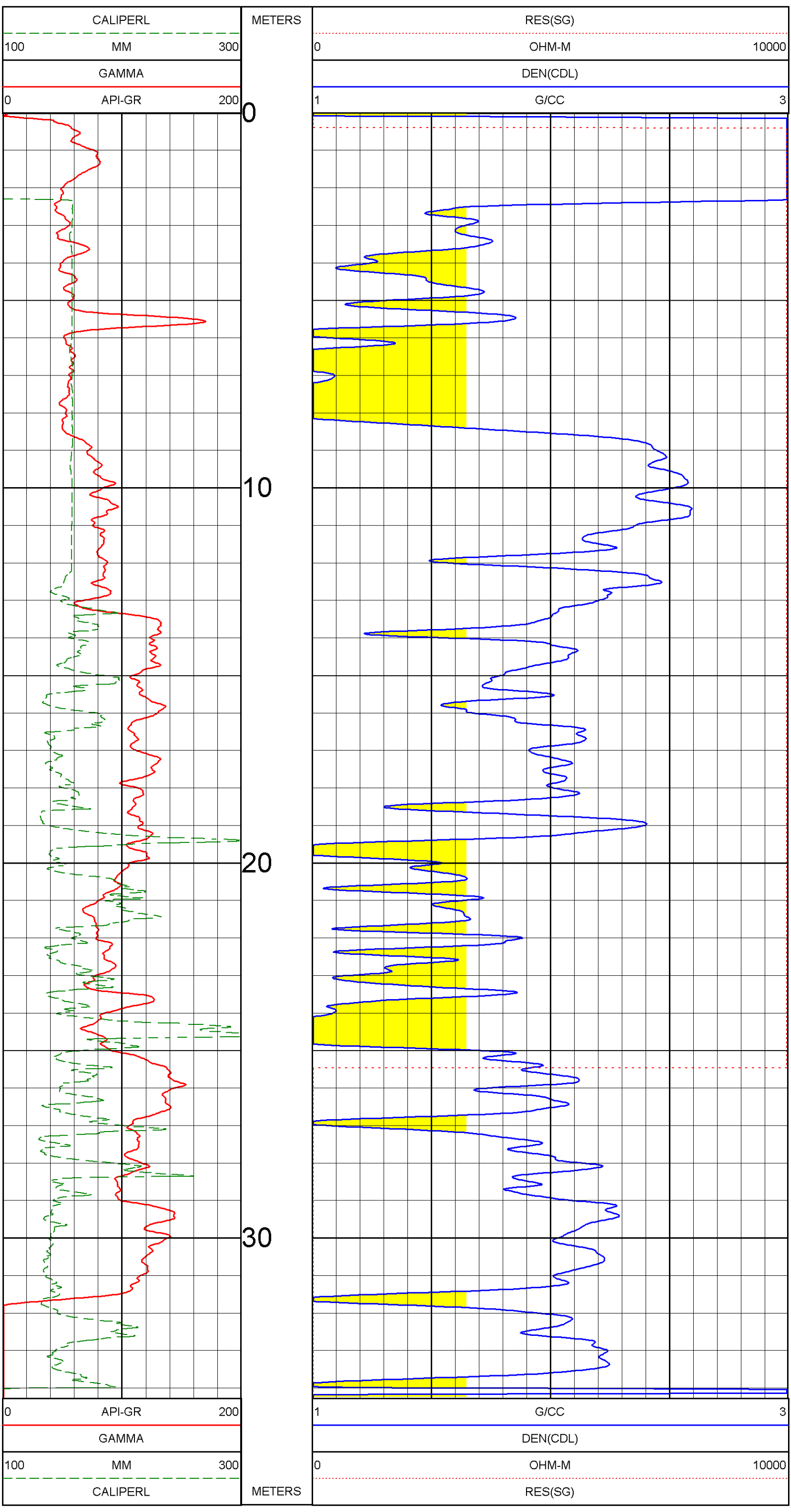
PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A
DATE	:08/14/12	RIG NUMBER	:GED
DEPTH DRILLER	:184.00	LOGGER TD	:33.47
BIT SIZE	:120.65	ARRIVAL TIME	:14:00
LOG TOP	:-0.05	DEPARTURE TIME	:19:00
LOG BOTTOM	:34.25	CIRC STOPPED	:NA
CASING LOGGER	:12.00		
CASING DRILLER	:12.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:H20		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:Y.LEE		
RECORDED BY	:B.HILL		
REMARKS 1	:LOG THROUGH RODS		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DENSITY LOG 1:100 CM11-04 08/14/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 35.00 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/13/2012 VERSION = 3.64KF



DENSITY LOG 1:100 CM11-04 08/14/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 35.00 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/13/2012 VERSION = 3.64KF

TOOL CALIBRATION CM11-04 08/14/12 18:44
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 2404

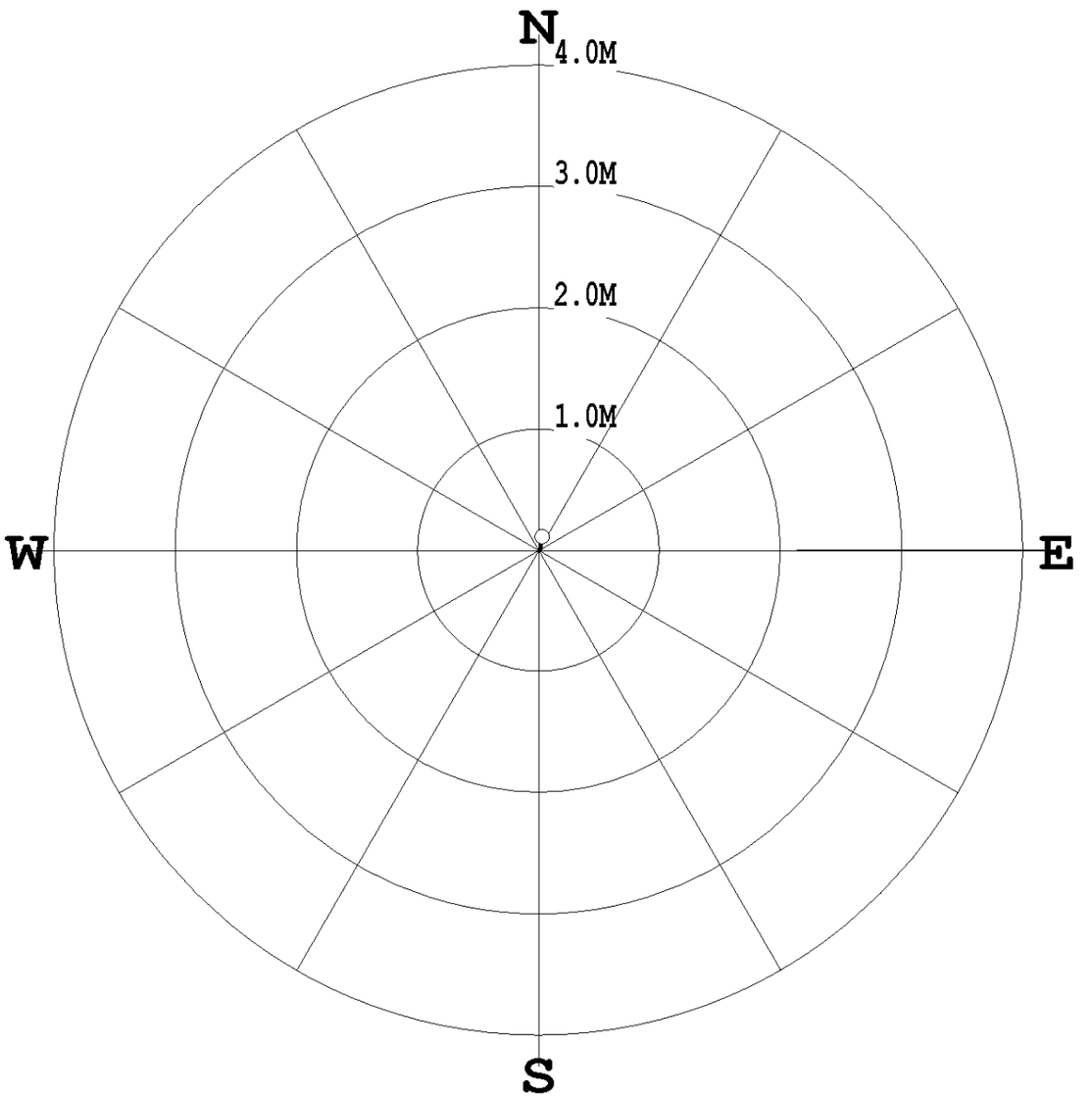
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Jun02,12	16:01:05	GAMMA	0.000	[API-GR]	4.000	[CPS]
	Jun02,12	16:01:05	GAMMA	545.000	[API-GR]	635.000	[CPS]
2	Jun02,12	16:20:27	VOLTAGE	23.000	[MV]	6860.000	[CPS]
	Jun02,12	16:20:27	VOLTAGE	225.000	[MV]	34055.000	[CPS]
3	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
4	Jun02,12	16:01:58	DEN(LS)	1.620	[G/CC]	13852.000	[CPS]
	Jun02,12	16:01:58	DEN(LS)	2.612	[G/CC]	1895.000	[CPS]
5	Jun02,12	16:02:26	DEN(SS)	1.590	[G/CC]	45738.000	[CPS]
	Jun02,12	16:02:26	DEN(SS)	2.580	[G/CC]	18052.000	[CPS]
6	Jul02,12	19:44:14	CALIPERL	100.000	[MM]	236854.000	[CPS]
	Jul02,12	19:44:14	CALIPERL	200.000	[MM]	339407.000	[CPS]
7	Jun02,12	16:20:44	CURRENT	23.000	[UA]	2925.000	[CPS]
	Jun02,12	16:20:44	CURRENT	225.000	[UA]	18770.000	[CPS]
8	Jun02,12	16:00:49	F	Default	[CPS]		
9	Jun02,12	16:00:49	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-04
DATE OF LOG: 08/14/12
PROBE: 9058A 2631

MAG DECL: 35.0

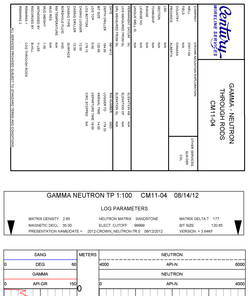
SCALE: 1 M/CM
TRUE DEPTH: 33.52 M
AZIMUTH: 15.0
DISTANCE: 0.1 M
+ = 50 M INCR
○ = BOTTOM OF HOLE

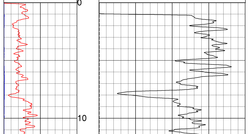


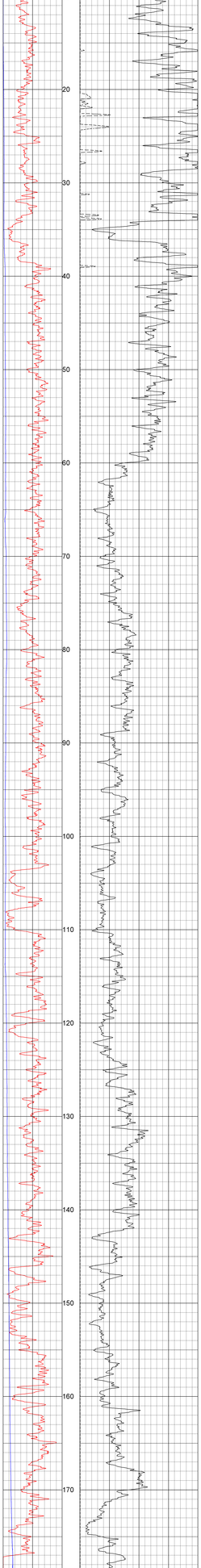
* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

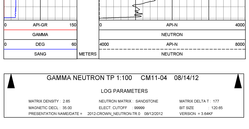
CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM11-04
FIELD OFFICE : CENTURY GEO DATE OF LOG : 08/14/12
DATA FROM : N/A PROBE : 9058A , 2631
MAG. DECL. : 35.000 DEPTH UNITS : METERS
LOG: CM11-04_08-14-12_18-27_9058A_.01_15.00_33.71_DEVI.log

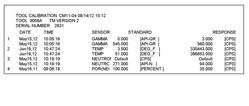
CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
15.01	15.01	-0.00	0.00	0.0	102.6	0.1	102.6
16.00	16.00	-0.00	0.00	0.0	143.0	0.2	182.0
17.00	17.00	-0.00	0.00	0.0	135.8	0.1	96.4
18.00	18.00	-0.00	0.00	0.0	131.8	0.1	159.1
19.00	19.00	-0.00	0.00	0.0	134.1	0.1	247.6
20.00	20.00	-0.00	0.00	0.0	125.6	0.2	80.4
21.00	21.00	-0.00	0.01	0.0	118.3	0.1	133.5
22.00	22.00	-0.00	0.01	0.0	107.1	0.0	83.0
23.00	23.00	-0.00	0.01	0.0	90.5	0.1	72.5
24.00	24.00	0.00	0.01	0.0	76.4	0.3	31.1
25.00	25.00	0.01	0.01	0.0	60.3	0.7	20.6
26.00	26.00	0.01	0.01	0.0	47.5	0.8	16.5
27.00	27.00	0.02	0.02	0.0	38.4	0.5	12.9
28.00	28.00	0.03	0.02	0.0	29.9	0.5	11.3
29.00	29.00	0.04	0.02	0.0	23.5	0.5	353.1
30.00	30.00	0.06	0.02	0.1	20.6	0.7	14.4
31.00	31.00	0.07	0.02	0.1	18.4	0.7	10.5
32.00	32.00	0.08	0.03	0.1	17.0	1.0	9.8
33.00	33.00	0.10	0.03	0.1	15.6	0.9	3.8
33.52	33.52	0.11	0.03	0.1	15.0	0.8	8.6











TOOL CALIBRATION CM11-04 08/14/12 15:12
TOOL MSMA TM VERSION 2
SERIAL NUMBER 2631

	DATE	TIME	SENSOR	STANDARD	RESPONSE	
1	May15,12	10:05:18	GAMMA	0.000	API-GR	0.000 [CPS]
	May15,12	10:06:18	GAMMA	200.000	API-GR	33333.000 [CPS]
2	Jan19,12	10:47:24	TEMP	0.500	DEG_F	339340.000 [CPS]
	Jan19,12	10:47:24	TEMP	51.000	DEG_F	398583.000 [CPS]
3	May16,12	10:19:18	NEUTRC	0.000	API-N	Default [CPS]
	May16,12	10:19:18	NEUTRC	1000.000	API-N	34.000 [CPS]
4	May16,11	09:08:18	PORUND	100.000	PERCENT	99.000 [CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-07

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-07
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:08/21/12	RIG NUMBER	:GED
DEPTH DRILLER	:163.00	LOGGER TD	:163.00
BIT SIZE	:120.65	ARRIVAL TIME	:21:00
LOG TOP	:0.00	DEPARTURE TIME	:05:00
LOG BOTTOM	:162.76	CIRC STOPPED	:N/A
CASING LOGGER	:3.00		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

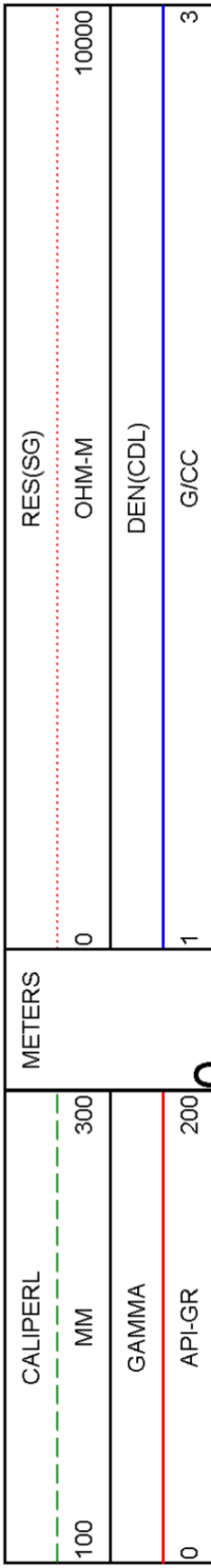
DENSITY 1:100 CM11-07 08/21/12

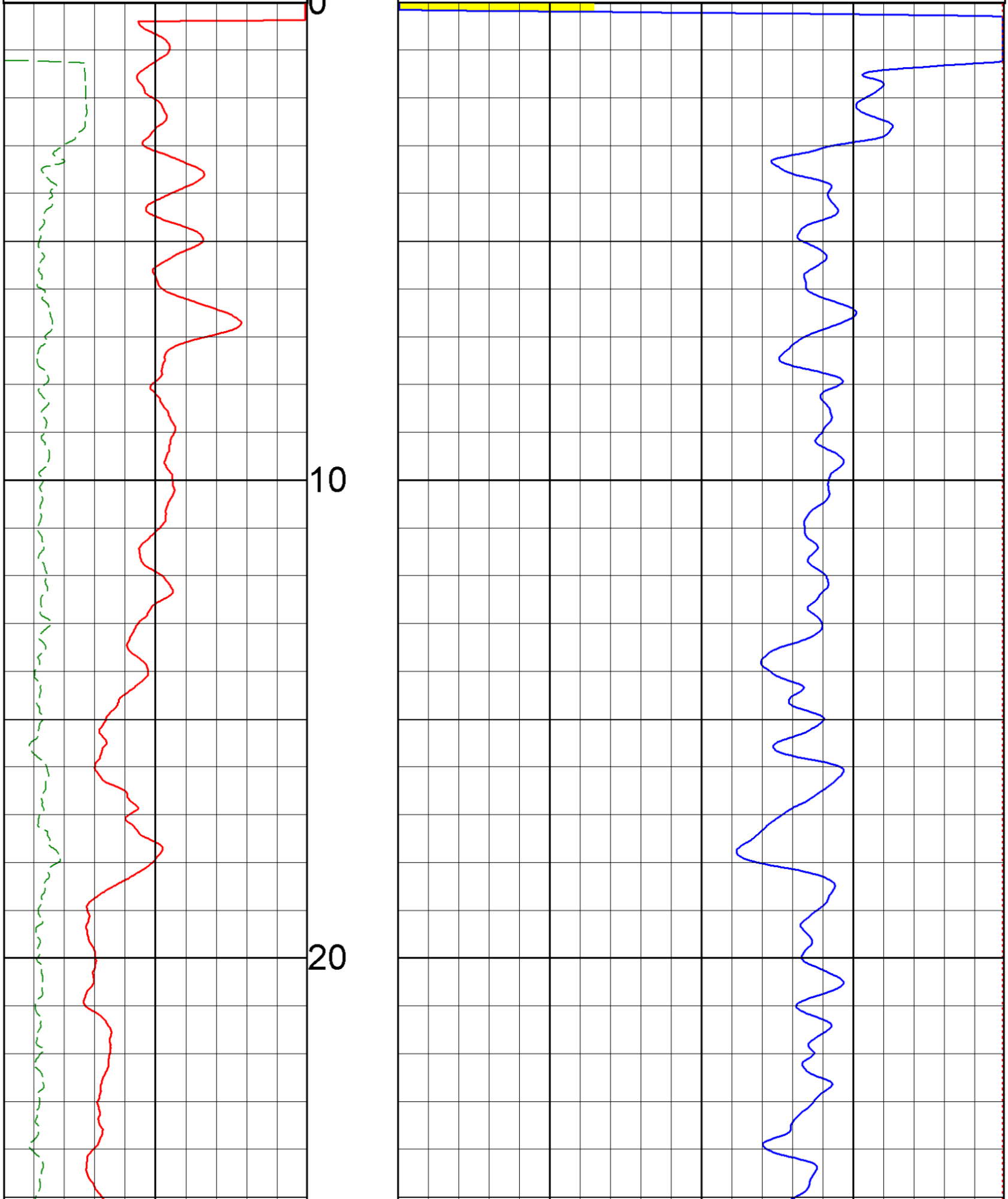
LOG PARAMETERS

MATRIX DENSITY : 2.65
MAGNETIC DECL : 35.00
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/19/2012

NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KF

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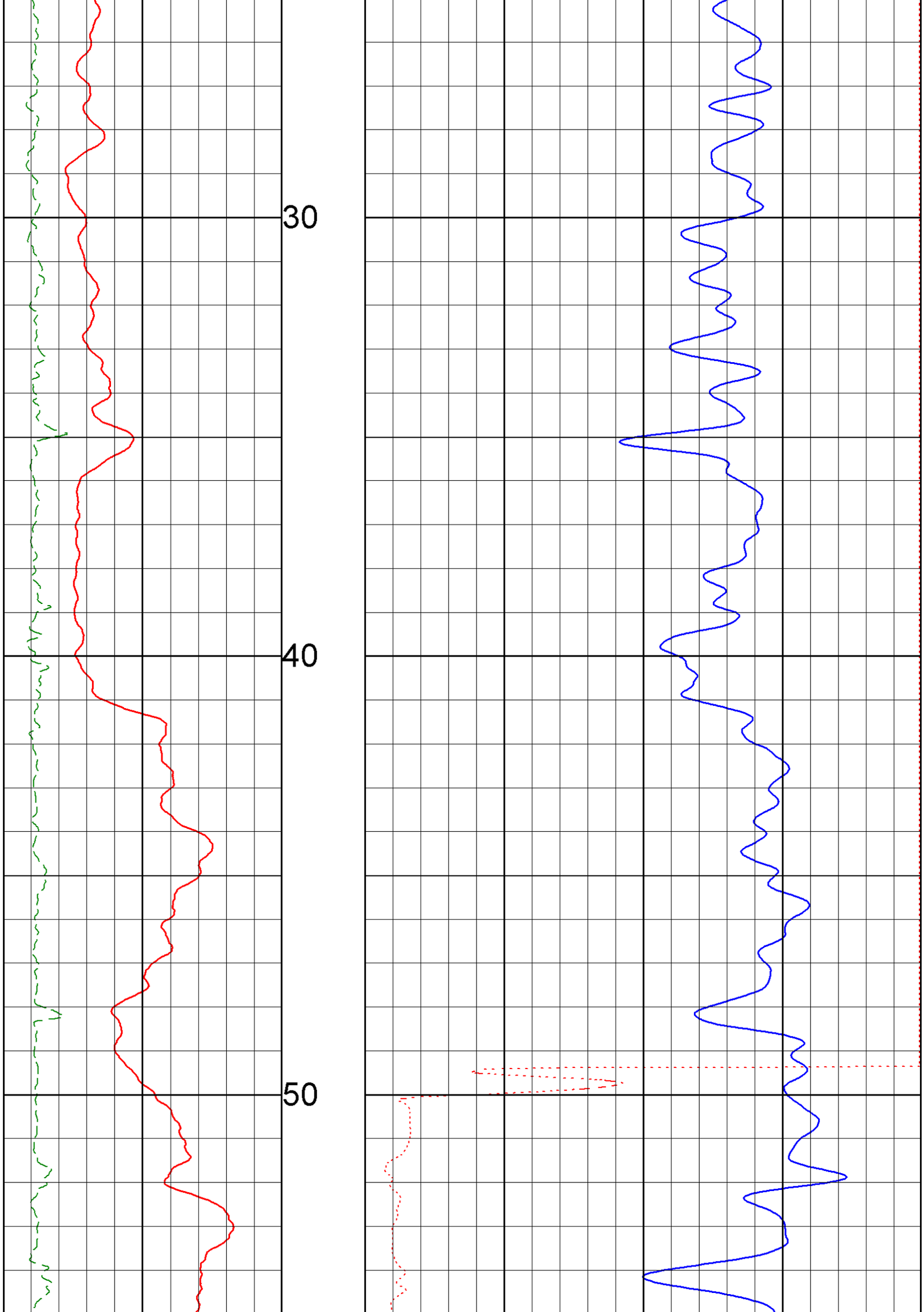
10
20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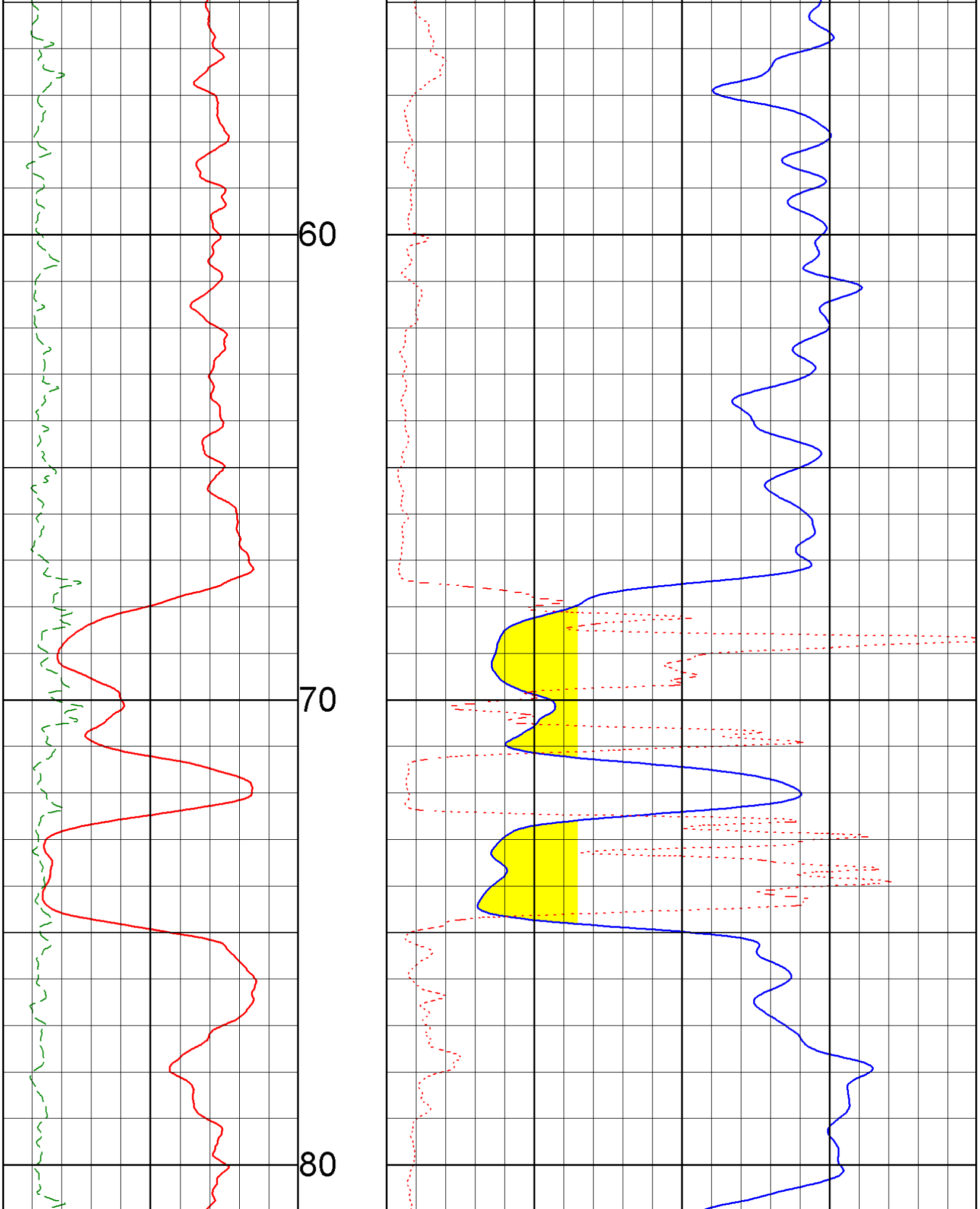
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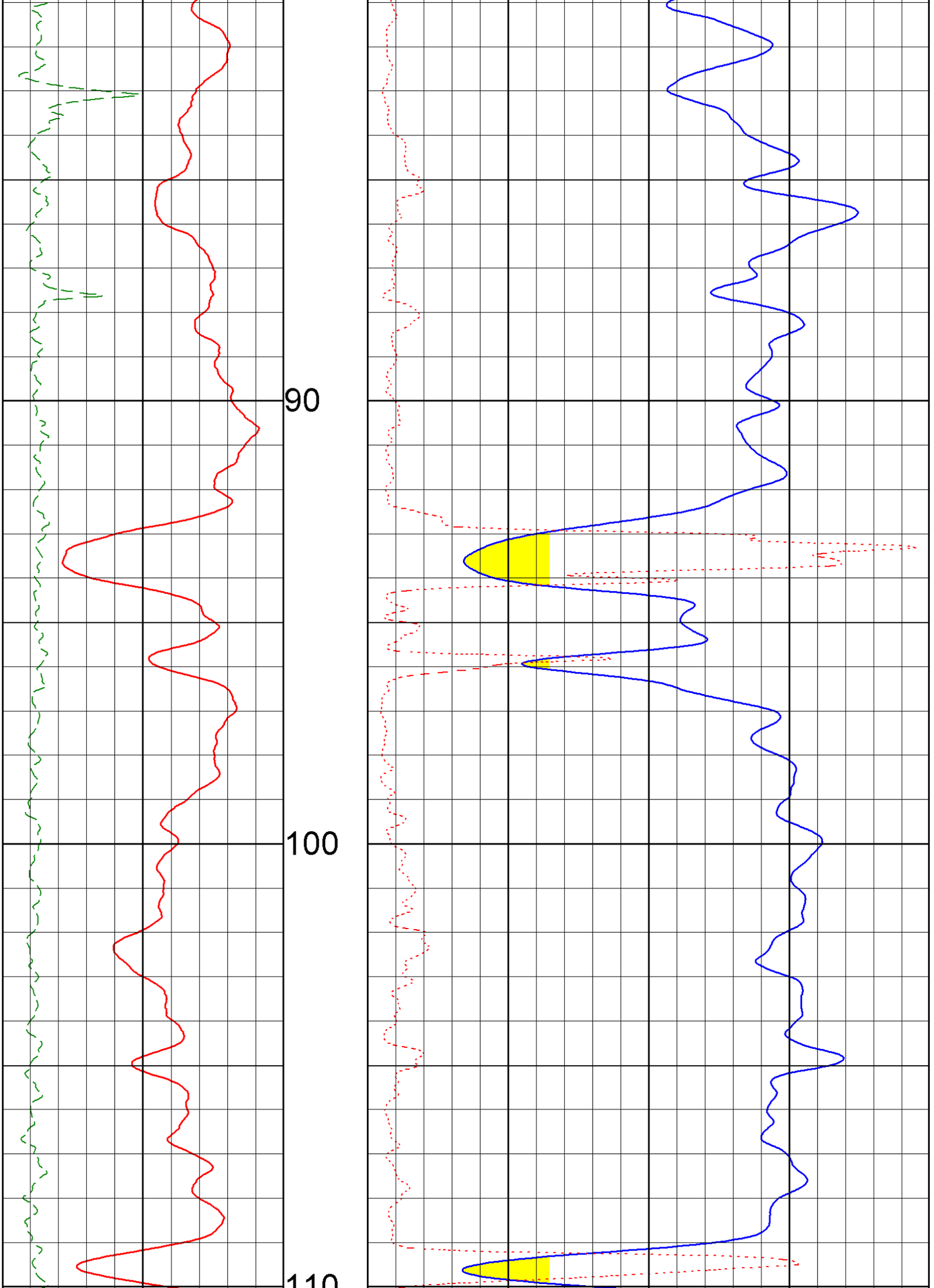
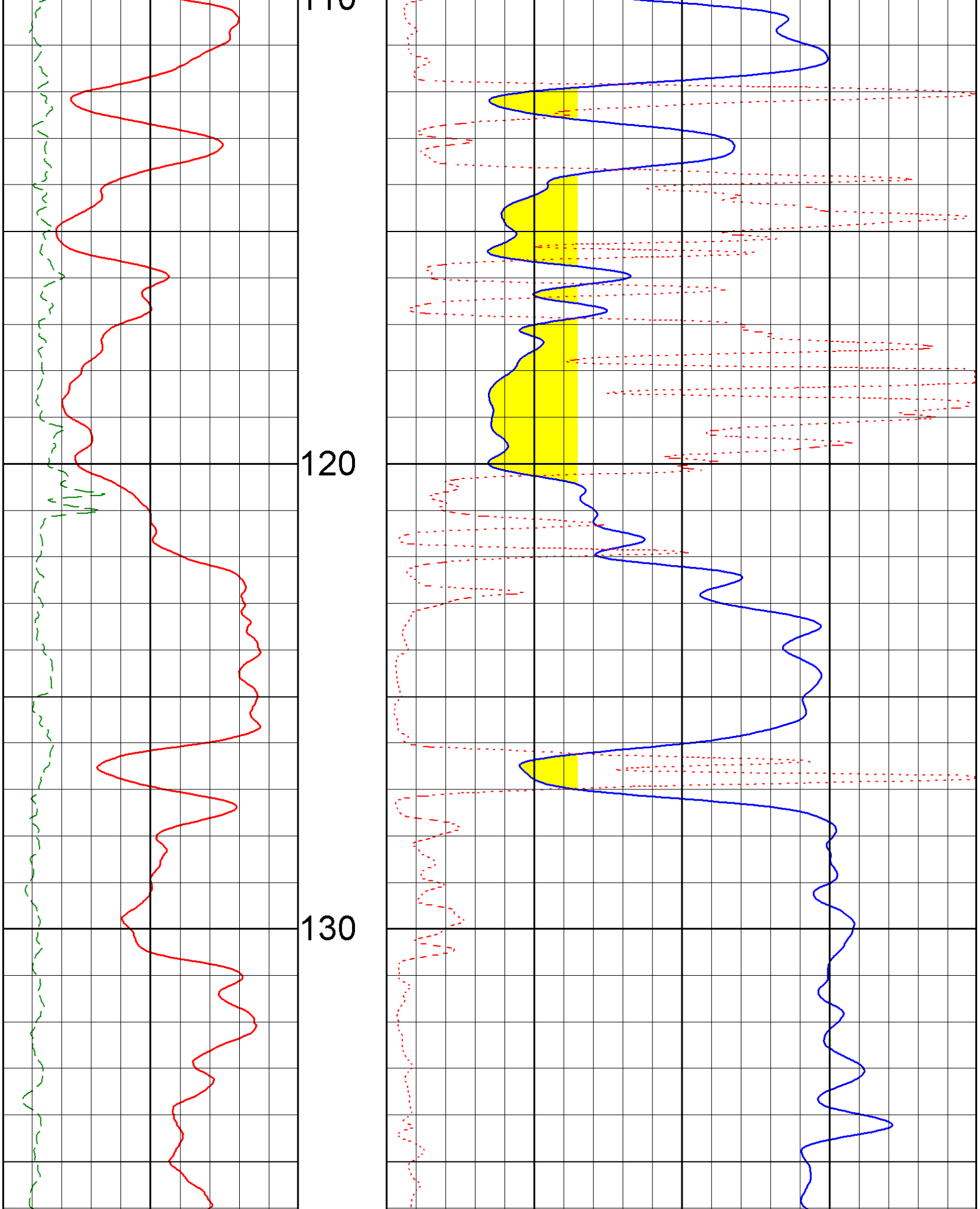
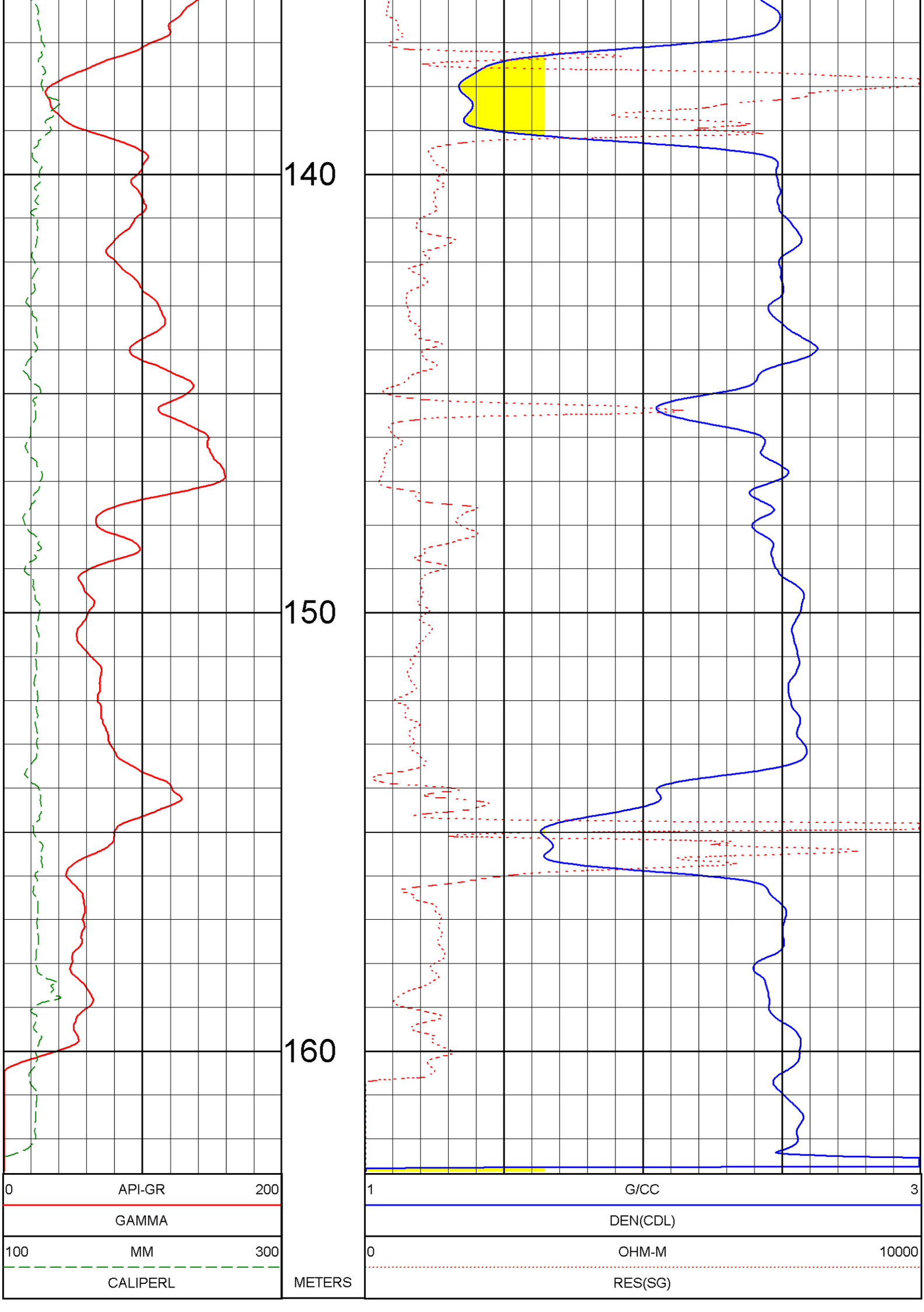
70
80


90
100
110


110
120
130


140
150
160
0
API-GR
200
GAMMA
100
MM
300
CALIPERL
METERS
1
G/CC
3
DEN(CDL)
0
OHM-M
10000
RES(SG)

DENSITY 1:100 CM11-07 08/21/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 35.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/19/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-07 08/21/12 04:25
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

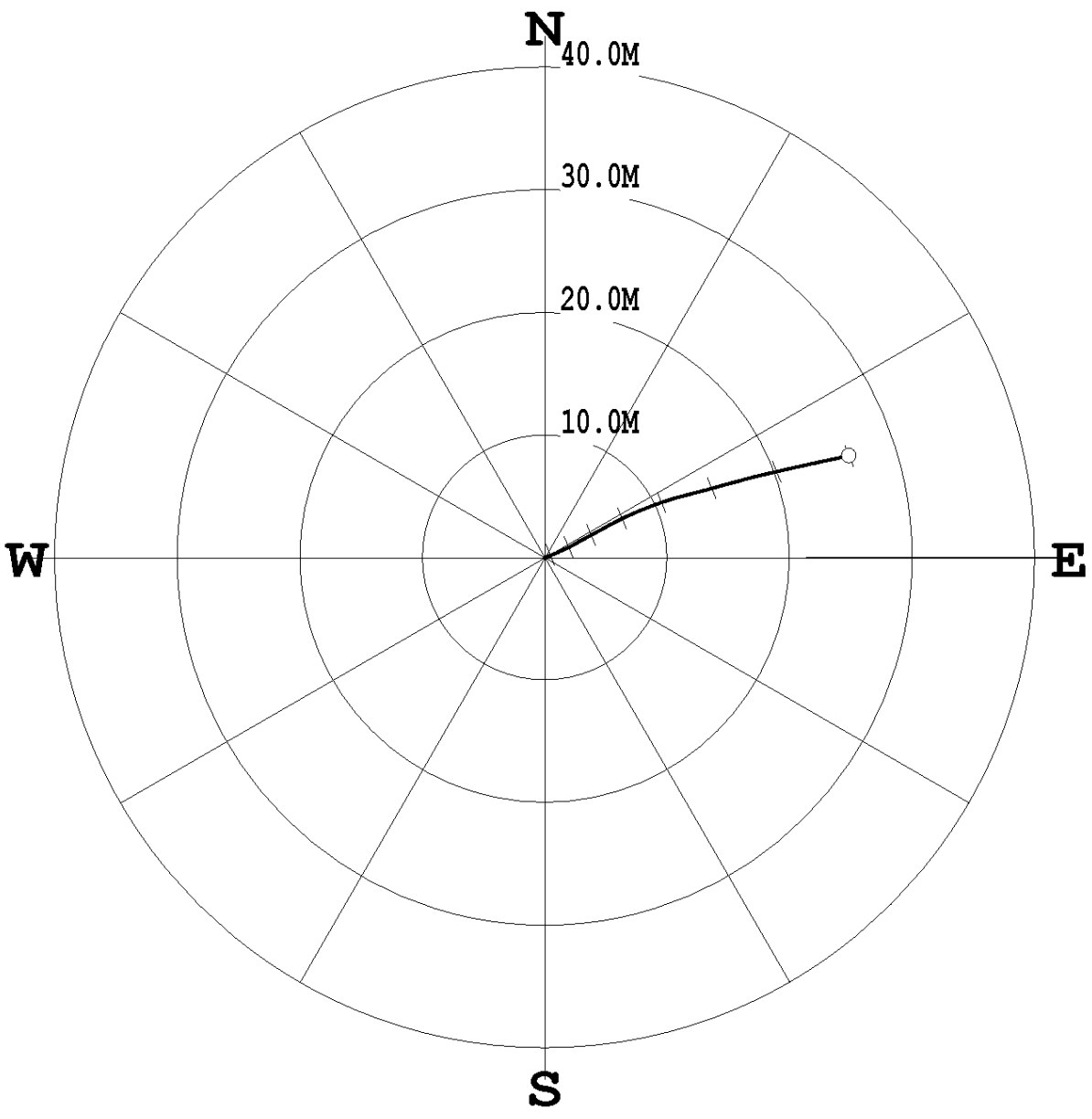
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-07
DATE OF LOG: 08/21/12
PROBE: 9055A 59

MAG DECL: 35.0

SCALE: 5 M/CM
TRUE DEPTH: 159.97 M
AZIMUTH: 71.5
DISTANCE: 26.1 M
+ = 20 M INCR
○ = BOTTOM OF HOLE

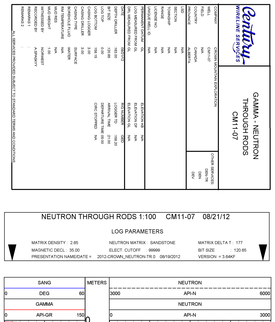


* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY GEO
DATA FROM : N/A
MAG. DECL. : 35.000
LOG: CM11-07_08-21-12_03-42_9055A_.02_6.00_162.76_DEVI.log

HOLE ID. : CM11-07
DATE OF LOG : 08/21/12
PROBE : 9055A , 59
DEPTH UNITS : METERS

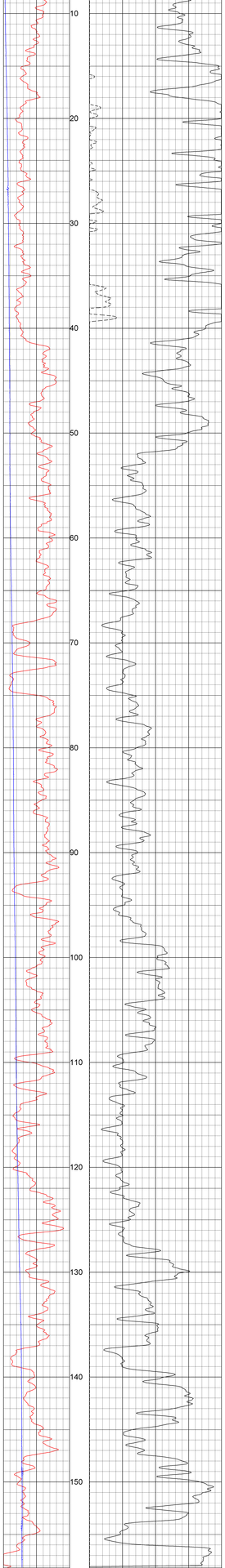
CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
6.02	6.02	0.00	-0.00	0.0	352.4	0.4	352.4
7.00	7.00	0.01	0.01	0.0	31.7	0.4	46.4
8.00	8.00	0.01	0.02	0.0	53.1	1.1	71.4
9.00	9.00	0.02	0.04	0.0	62.2	1.5	62.8
10.00	10.00	0.03	0.07	0.1	64.0	1.8	72.3
11.00	11.00	0.04	0.09	0.1	65.8	1.7	81.4
12.00	12.00	0.05	0.12	0.1	65.9	1.8	51.7
13.00	13.00	0.07	0.15	0.2	66.0	2.4	66.8
14.00	14.00	0.09	0.19	0.2	65.7	2.4	58.1
15.00	15.00	0.10	0.23	0.3	65.4	2.8	59.7
16.00	15.99	0.13	0.27	0.3	64.7	2.3	56.5
17.00	16.99	0.14	0.31	0.3	65.5	2.8	68.8
18.00	17.99	0.17	0.36	0.4	65.1	2.9	63.0
19.00	18.99	0.19	0.40	0.4	65.1	2.6	52.2
20.00	19.99	0.20	0.45	0.5	65.5	3.2	72.4
21.00	20.99	0.22	0.50	0.5	66.2	3.4	70.8
22.00	21.99	0.24	0.56	0.6	66.4	3.1	74.5
23.00	22.98	0.26	0.62	0.7	67.0	3.7	62.8
24.00	23.98	0.29	0.68	0.7	67.3	4.6	67.6
25.00	24.98	0.32	0.75	0.8	67.1	4.3	61.7
26.00	25.98	0.35	0.82	0.9	67.2	4.8	60.7
27.00	26.97	0.38	0.90	1.0	67.0	4.9	70.7
28.00	27.97	0.41	0.97	1.1	67.2	4.7	64.7
29.00	28.97	0.44	1.05	1.1	67.2	4.7	65.8
30.00	29.96	0.47	1.12	1.2	67.3	4.7	65.0
31.00	30.96	0.52	1.19	1.3	66.6	4.9	45.9
32.00	31.96	0.54	1.26	1.4	66.9	4.7	69.2
33.00	32.95	0.57	1.34	1.5	67.0	5.3	63.6
34.00	33.95	0.61	1.42	1.5	66.7	5.4	60.3
35.00	34.94	0.66	1.51	1.6	66.5	5.4	68.4
36.00	35.94	0.69	1.59	1.7	66.4	5.3	70.0
37.00	36.93	0.73	1.68	1.8	66.4	4.9	73.3
38.00	37.93	0.76	1.76	1.9	66.6	4.5	58.7
39.00	38.93	0.80	1.84	2.0	66.4	5.7	72.0
40.00	39.92	0.84	1.93	2.1	66.4	5.4	65.7
41.00	40.92	0.89	2.02	2.2	66.3	5.9	62.5
42.00	41.91	0.94	2.11	2.3	66.0	5.6	59.1
43.00	42.91	0.98	2.19	2.4	65.8	5.7	57.7
44.00	43.90	1.03	2.28	2.5	65.6	5.6	60.7
45.00	44.90	1.08	2.37	2.6	65.5	5.8	60.1
46.00	45.89	1.13	2.46	2.7	65.3	5.7	68.0
47.00	46.89	1.18	2.55	2.8	65.1	5.7	67.4
48.00	47.88	1.24	2.63	2.9	64.8	6.6	58.8
49.00	48.87	1.29	2.72	3.0	64.6	5.8	57.5
50.00	49.87	1.34	2.81	3.1	64.5	5.4	67.0
51.00	50.86	1.39	2.90	3.2	64.4	5.9	59.5
52.00	51.86	1.43	2.99	3.3	64.4	6.8	60.3
53.00	52.85	1.48	3.08	3.4	64.3	6.2	63.8
54.00	53.85	1.53	3.17	3.5	64.2	6.1	58.6
55.00	54.84	1.58	3.27	3.6	64.2	6.1	65.2
56.00	55.84	1.63	3.36	3.7	64.1	6.0	60.2
57.00	56.83	1.68	3.46	3.8	64.1	6.4	68.3
58.00	57.82	1.74	3.55	4.0	63.9	6.3	54.1
59.00	58.82	1.79	3.64	4.1	63.8	5.7	73.1
60.00	59.81	1.84	3.75	4.2	63.8	6.4	57.1
61.00	60.80	1.90	3.85	4.3	63.7	7.0	62.5
62.00	61.80	1.96	3.96	4.4	63.7	7.1	66.1
63.00	62.79	2.01	4.07	4.5	63.7	7.6	56.5
64.00	63.78	2.08	4.18	4.7	63.6	7.8	56.6
65.00	64.77	2.14	4.29	4.8	63.5	7.7	56.9
66.00	65.76	2.21	4.40	4.9	63.3	7.4	59.9
67.00	66.76	2.26	4.52	5.0	63.4	7.9	62.8
68.00	67.75	2.33	4.64	5.2	63.4	8.1	61.2
69.00	68.74	2.39	4.76	5.3	63.3	8.1	63.4
70.00	69.73	2.46	4.88	5.5	63.3	8.6	71.1
71.00	70.72	2.53	5.01	5.6	63.2	8.1	62.1
72.00	71.71	2.60	5.13	5.8	63.2	8.6	61.1
73.00	72.69	2.67	5.26	5.9	63.1	8.2	63.4
74.00	73.68	2.74	5.39	6.0	63.1	8.6	59.6
75.00	74.67	2.81	5.53	6.2	63.1	8.9	65.2
76.00	75.66	2.88	5.66	6.4	63.1	8.7	63.6
77.00	76.65	2.94	5.81	6.5	63.1	9.5	61.6
78.00	77.63	3.02	5.95	6.7	63.1	9.2	66.8
79.00	78.62	3.09	6.09	6.8	63.1	9.2	60.1
80.00	79.61	3.16	6.23	7.0	63.1	9.0	62.7
81.00	80.60	3.23	6.37	7.1	63.1	8.2	62.4
82.00	81.58	3.30	6.51	7.3	63.1	9.1	63.6
83.00	82.57	3.37	6.66	7.5	63.1	9.2	66.4
84.00	83.56	3.43	6.80	7.6	63.2	9.2	66.8
85.00	84.54	3.50	6.95	7.8	63.3	9.3	60.8
86.00	85.53	3.57	7.10	7.9	63.3	9.2	71.7
87.00	86.52	3.64	7.25	8.1	63.4	9.5	58.1
88.00	87.50	3.70	7.40	8.3	63.4	9.5	69.1
89.00	88.49	3.77	7.55	8.4	63.5	10.1	64.1
90.00	89.48	3.83	7.70	8.6	63.6	9.4	75.0
91.00	90.46	3.90	7.86	8.8	63.6	9.8	65.8
92.00	91.45	3.96	8.02	8.9	63.7	9.8	72.2
93.00	92.43	4.02	8.18	9.1	63.8	10.1	66.6
94.00	93.42	4.08	8.34	9.3	63.9	10.5	68.4
95.00	94.40	4.15	8.51	9.5	64.0	10.4	75.2
96.00	95.38	4.21	8.67	9.6	64.1	10.4	71.3
97.00	96.37	4.27	8.85	9.8	64.2	9.7	76.5
98.00	97.35	4.34	9.00	10.0	64.3	10.3	66.6
99.00	98.33	4.39	9.18	10.2	64.4	11.0	70.8
100.00	99.31	4.46	9.37	10.4	64.5	11.3	71.0
101.00	100.29	4.52	9.55	10.6	64.7	11.4	70.1
102.00	101.28	4.59	9.74	10.8	64.8	11.3	72.4
103.00	102.26	4.64	9.92	11.0	64.9	11.4	71.1
104.00	103.24	4.70	10.11	11.1	65.0	11.4	65.7
105.00	104.22	4.77	10.30	11.3	65.1	11.5	75.1
106.00	105.20	4.83	10.48	11.5	65.3	11.5	74.4
107.00	106.18	4.88	10.68	11.7	65.4	11.7	71.8
108.00	107.16	4.94	10.87	11.9	65.6	11.6	79.7
109.00	108.14	4.99	11.07	12.1	65.7	12.0	73.2
110.00	109.12	5.04	11.26	12.3	65.9	11.4	80.9
111.00	110.09	5.09	11.46	12.5	66.1	11.3	72.9
112.00	111.07	5.14	11.66	12.7	66.2	12.0	81.3
113.00	112.05	5.19	11.86	13.0	66.4	12.4	74.3
114.00	113.03	5.25	12.07	13.2	66.5	12.2	76.1
115.00	114.00	5.31	12.28	13.4	66.6	12.3	76.5
116.00	114.98	5.35	12.49	13.6	66.8	12.6	75.4
117.00	115.96	5.41	12.70	13.8	66.9	12.3	77.6
118.00	116.93	5.47	12.91	14.0	67.0	12.8	75.3
119.00	117.91	5.52	13.13	14.2	67.2	12.9	80.0
120.00	118.88	5.59	13.35	14.5	67.3	12.8	73.8
121.00	119.85	5.64	13.57	14.7	67.4	13.4	75.3
122.00	120.83	5.70	13.79	14.9	67.5	13.0	78.9
123.00	121.80	5.77	14.02	15.2	67.6	14.2	70.9
124.00	122.77	5.83	14.25	15.4	67.7	13.9	75.4
125.00	123.74	5.90	14.49	15.6	67.9	14.2	75.1
126.00	124.71	5.96	14.73	15.9	68.0	14.2	74.4
127.00	125.67	6.03	14.96	16.1	68.1	14.8	74.7
128.00	126.64	6.09	15.20	16.4	68.2	15.5	58.1
129.00	127.61	6.16	15.44	16.6	68.3	14.0	76.4
130.00	128.58	6.22	15.68	16.9	68.4	14.9	73.2
131.00	129.55	6.29	15.93	17.1	68.4	15.9	72.3
132.00	130.51	6.36	16.18	17.4	68.6	15.9	74.0
133.00	131.47	6.43	16.45	17.7	68.6	16.1	76.0
134.00	132.43	6.50	16.72	17.9	68.7	16.3	75.5
135.00	133.39	6.57	16.98	18.2	68.8	16.3	74.2
136.00	134.36	6.64	17.25	18.5	68.9	15.5	78.9
137.00	135.31	6.71	17.53	18.8	69.1	16.5	76.2
138.00	136.27	6.77	17.80	19.0	69.2	15.7	79.6
139.00	137.23	6.84	18.08	19.3	69.3	16.7	77.2
140.00	138.19	6.90	18.36	19.6	69.4	16.8	76.8
141.00	139.15	6.97	18.64	19.9	69.5	17.0	76.9
142.00	140.11	7.03	18.92	20.2	69.6	17.0	74.6
143.00	141.06	7.09	19.20	20.5	69.7	16.5	79.3
144.00	142.02	7.15	19.47	20.7	69.8	16.4	77.4
145.00	142.98	7.22	19.76	21.0	69.9	17.0	77.9
146.00	143.94	7.28	20.04	21.3	70.0	17.0	78.2
147.00	144.89	7.35	20.33	21.6	70.1	17.2	77.9
148.00	145.85	7.41	20.62	21.9	70.2	17.1	78.6
149.00	146.80	7.47	20.90	22.2	70.3	15.9	81.6
150.00	147.76	7.54	21.19	22.5	70.4	17.5	77.9
151.00	148.71	7.60	21.48	22.8	70.5	17.2	78.8
152.00	149.67	7.66	21.76	23.1	70.6	16.7	77.9
153.00	150.63	7.72	22.04	23.4	70.7	17.1	76.9
154.00	151.59	7.79	22.33	23.6	70.8	17.1	75.7
155.00	152.54	7.85	22.62	23.9	70.9	17.4	77.0
156.00	153.50	7.91	22.90	24.2	71.0	16.9	77.3
157.00	154.45	7.97	23.19	24.5	71.0	16.8	76.7
158.00	155.41	8.03	23.47	24.8	71.1	16.6	78.3
159.00	156.37	8.09	23.75	25.1	71.2	16.7	78.6
160.00	157.33	8.14	24.03	25.4	71.3	17.6	77.2
161.00	158.28	8.20	24.31	25.7	71.4	16.5	79.4
162.00	159.24	8.26	24.59	25.9	71.4	16.4	78.7
162.76	159.93	8.29	24.79	26.1	71.5	16.2	80.0



NEUTRON THROUGH RODS 1:100 CM11-07 08/21/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 00.00 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAMEDATE = : 2012-CROWL_NEUTRON-THR : 09/19/2012 VERSION : 3.64KP



NEUTRON THROUGH RODS 1:100 CM11-07 08/21/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 00.00 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAMEDATE = : 2012-CROWL_NEUTRON-THR : 09/19/2012 VERSION : 3.64KP

TOOL CALIBRATION: CM11-07 06/21/12 00:38
TOOL 9055A TM VERSION 4
SERIAL NUMBER : 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Mar12,08	08:20:59	THERMOST	0.000	[DEG]		
3	Mar12,08	08:20:59	RES	0.000	[OHM]	9674.000	[CPS]
	Mar12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	Mar12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	Mar12,08	08:20:52	SP	80.000	[MV]	3462.000	[CPS]
5	Oct15,07	08:00:58	NEUTRON	271.000	[API-N]	0.000	[CPS]
	Oct04,09	10:40:49	NEUTRC	271.000	[API-N]	99.000	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-08

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-08
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:BRITISH COLUMBIA

OTHER SERVICES:
DEV
DEN TR
NEU TR

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

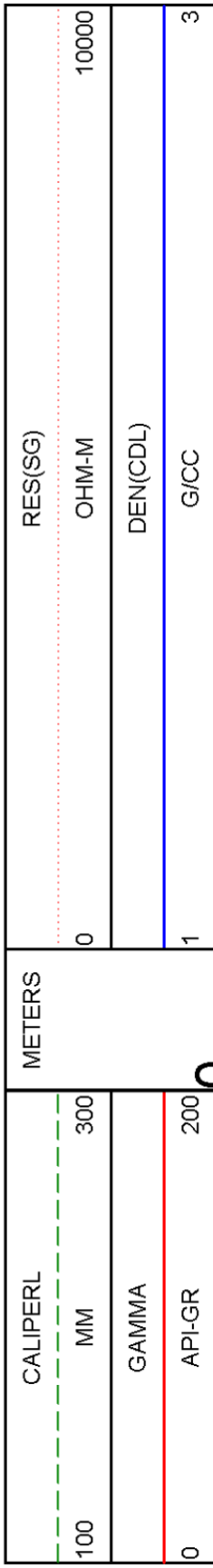
DATE	:08/23/12	RIG NUMBER	:GED
DEPTH DRILLER	:82.00	LOGGER TD	:81.70
BIT SIZE	:120.65	ARRIVAL TIME	:15:00
LOG TOP	:0.00	DEPARTURE TIME	:18:30
LOG BOTTOM	:81.43	CIRC STOPPED	:N/A
CASING LOGGER	:3.30		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:M. ESKRICK		
RECORDED BY	:M. LEBEDA		
REMARKS 1	:VERTICAL		
REMARKS 2	:PIPE SET @ 78.6M		

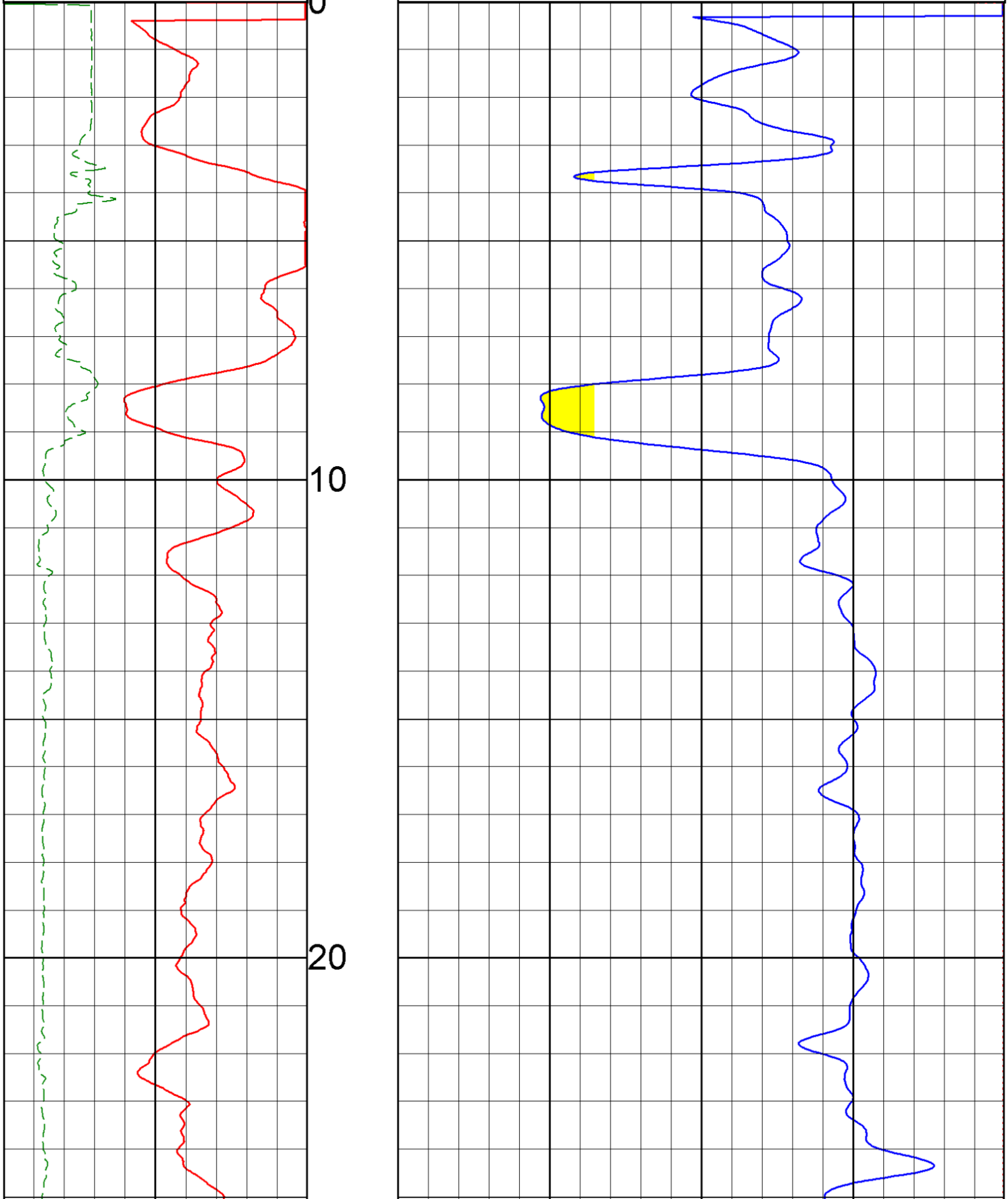
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAMMA DENSITY 1:100 CM11-08 08/23/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/23/2012		VERSION = 3.64KF	

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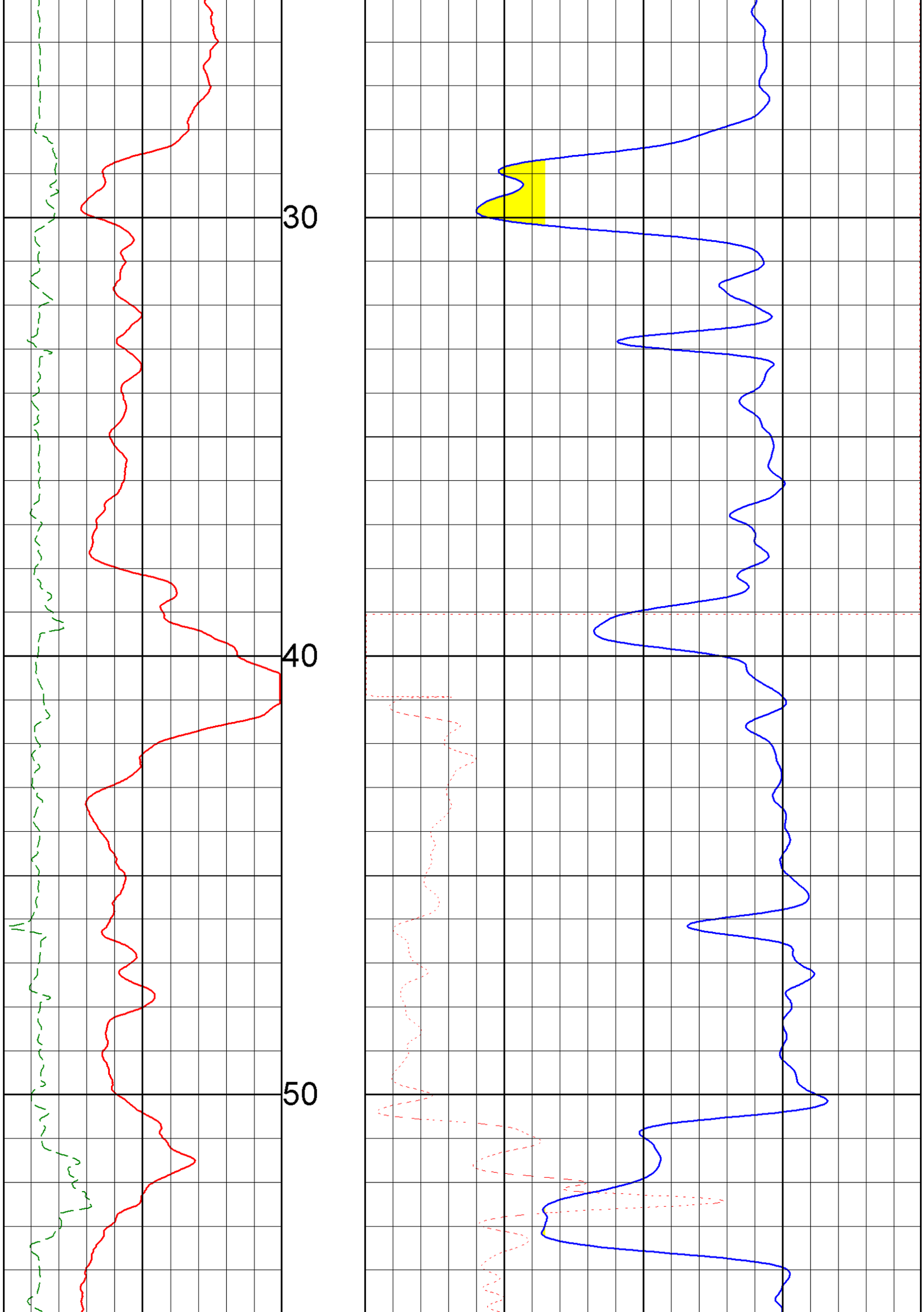
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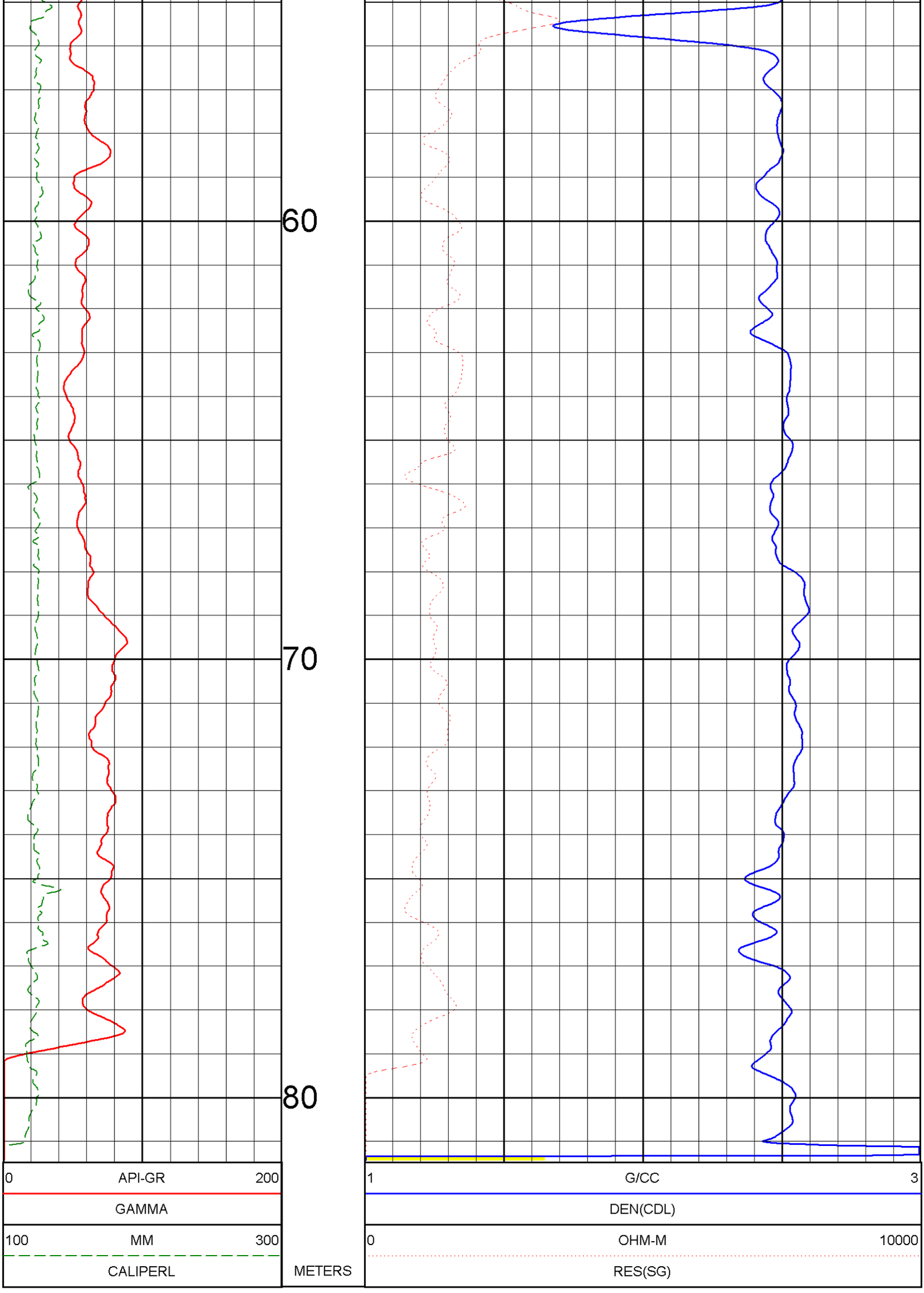

60
70
80
0
API-GR
200
GAMMA
100
MM
300
CALIPERL
METERS
1
G/CC
3
DEN(CDL)
0
OHM-M
10000
RES(SG)

GAMMA DENSITY 1:100 CM11-08 08/23/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177

MAGNETIC DECL : 15.00 ELECT. CUTOFF : 99999 BIT SIZE : 120.65

PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/23/2012 VERSION = 3.64KF

TOOL CALIBRATION CM11-08 08/23/12 17:46
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 2404

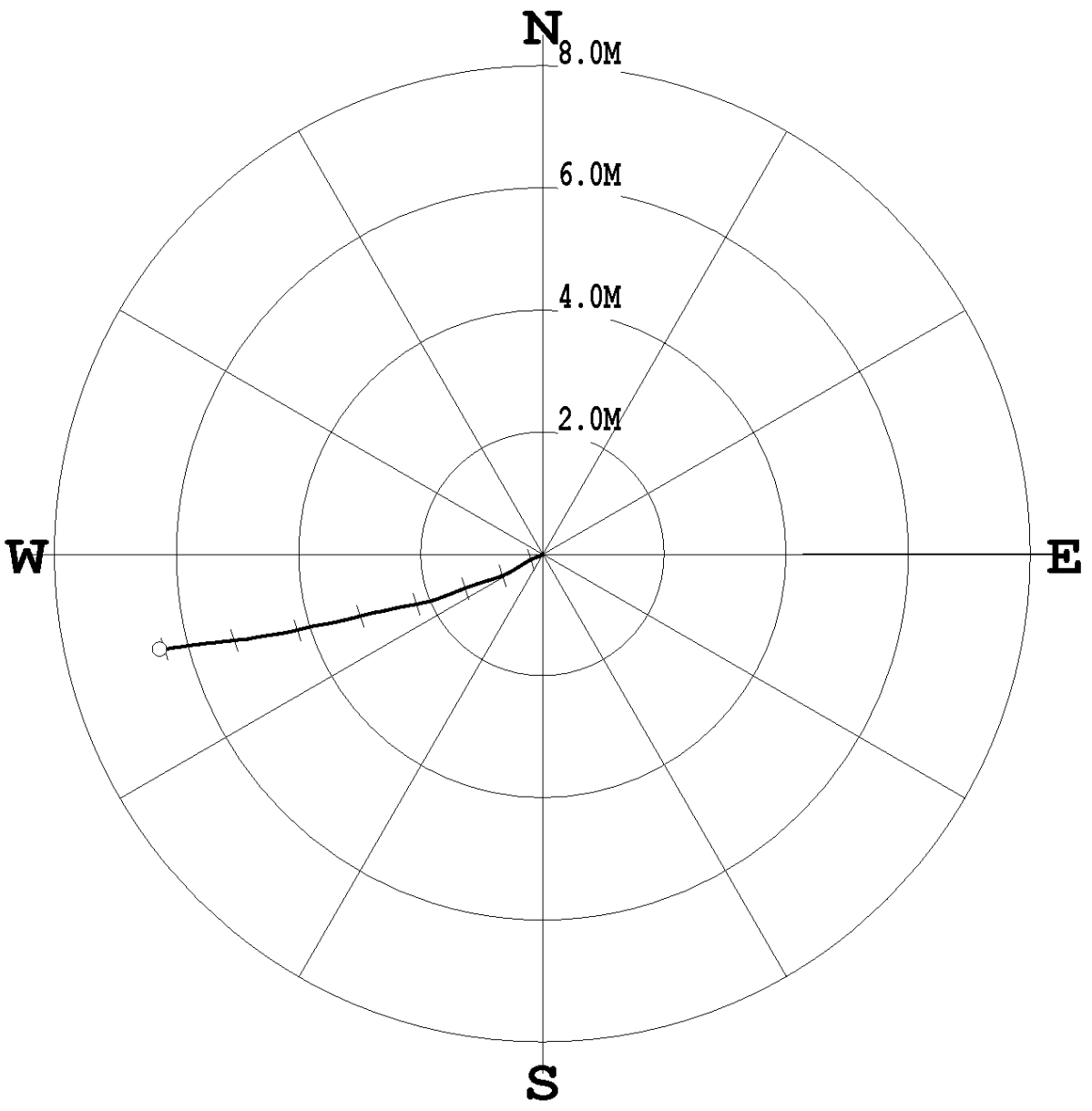
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Jun02,12	16:01:05	GAMMA	0.000	[API-GR]	4.000	[CPS]
	Jun02,12	16:01:05	GAMMA	545.000	[API-GR]	635.000	[CPS]
2	Jun02,12	16:20:27	VOLTAGE	23.000	[MV]	6860.000	[CPS]
	Jun02,12	16:20:27	VOLTAGE	225.000	[MV]	34055.000	[CPS]
3	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
4	Jun02,12	16:01:58	DEN(LS)	1.620	[G/CC]	13852.000	[CPS]
	Jun02,12	16:01:58	DEN(LS)	2.612	[G/CC]	1895.000	[CPS]
5	Jun02,12	16:02:26	DEN(SS)	1.590	[G/CC]	45738.000	[CPS]
	Jun02,12	16:02:26	DEN(SS)	2.580	[G/CC]	18052.000	[CPS]
6	Jul02,12	19:44:14	CALIPERL	100.000	[MM]	236854.000	[CPS]
	Jul02,12	19:44:14	CALIPERL	200.000	[MM]	339407.000	[CPS]
7	Jun02,12	16:20:44	CURRENT	23.000	[UA]	2925.000	[CPS]
	Jun02,12	16:20:44	CURRENT	225.000	[UA]	18770.000	[CPS]
8	Jun02,12	16:00:49	F	Default	[CPS]		
9	Jun02,12	16:00:49	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-08
DATE OF LOG: 08/23/12
PROBE: 9058A 2631

MAG DECL: 15.0

SCALE: 1 M/CM
TRUE DEPTH: 80.69 M
AZIMUTH: 256.0
DISTANCE: 6.5 M
+ = 10 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM11-08
FIELD OFFICE : CENTURY GEO DATE OF LOG : 08/23/12
DATA FROM : N/A PROBE : 9058A , 2631
MAG. DECL. : 15.000 DEPTH UNITS : METERS
LOG: CM11-08_08-23-12_17-17_9058A_.02_5.00_81.00_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
5.02	5.02	-0.00	-0.00	0.0	229.7	2.3	229.7
6.00	6.00	-0.02	-0.03	0.0	237.6	2.7	239.5
7.00	7.00	-0.04	-0.08	0.1	242.3	2.6	255.3
8.00	8.00	-0.06	-0.12	0.1	244.5	2.3	251.3
9.00	9.00	-0.07	-0.16	0.2	245.6	2.4	247.0
10.00	10.00	-0.09	-0.20	0.2	245.9	2.7	255.0
11.00	10.99	-0.11	-0.23	0.3	245.4	2.4	235.0
12.00	11.99	-0.13	-0.27	0.3	244.7	2.6	242.2
13.00	12.99	-0.15	-0.31	0.3	243.7	2.8	234.2
14.00	13.99	-0.18	-0.35	0.4	242.8	2.9	235.3
15.00	14.99	-0.21	-0.40	0.4	242.1	3.0	237.7
16.00	15.99	-0.24	-0.44	0.5	241.7	3.3	239.1
17.00	16.99	-0.27	-0.49	0.6	241.4	3.3	236.5
18.00	17.98	-0.30	-0.54	0.6	241.4	3.5	239.3
19.00	18.98	-0.32	-0.60	0.7	241.6	3.6	245.1
20.00	19.98	-0.35	-0.66	0.7	242.1	3.7	247.7
21.00	20.98	-0.37	-0.72	0.8	242.5	3.9	248.6
22.00	21.98	-0.39	-0.78	0.9	243.2	3.7	255.3
23.00	22.97	-0.41	-0.84	0.9	243.7	3.4	249.1
24.00	23.97	-0.43	-0.90	1.0	244.3	3.5	250.3
25.00	24.97	-0.45	-0.96	1.1	244.8	3.5	252.7
26.00	25.97	-0.47	-1.02	1.1	245.3	3.5	253.2
27.00	26.97	-0.49	-1.08	1.2	245.7	3.8	256.5
28.00	27.96	-0.51	-1.14	1.2	246.0	4.2	243.2
29.00	28.96	-0.53	-1.21	1.3	246.2	3.9	251.7
30.00	29.96	-0.55	-1.27	1.4	246.4	3.9	247.4
31.00	30.96	-0.58	-1.33	1.5	246.5	4.0	239.9
32.00	31.95	-0.61	-1.40	1.5	246.6	4.0	245.1
33.00	32.95	-0.64	-1.47	1.6	246.6	4.4	245.8
34.00	33.95	-0.66	-1.54	1.7	246.7	4.5	248.4
35.00	34.95	-0.69	-1.62	1.8	246.9	4.9	251.0
36.00	35.94	-0.72	-1.70	1.9	247.0	5.0	249.3
37.00	36.94	-0.75	-1.79	1.9	247.2	5.3	263.8
38.00	37.93	-0.78	-1.88	2.0	247.5	5.6	253.0
39.00	38.93	-0.80	-1.97	2.1	248.0	5.3	258.7
40.00	39.92	-0.82	-2.06	2.2	248.4	5.3	258.5
41.00	40.92	-0.83	-2.16	2.3	248.9	5.8	252.8
42.00	41.92	-0.85	-2.25	2.4	249.3	5.3	264.9
43.00	42.91	-0.86	-2.33	2.5	249.6	4.7	258.2
44.00	43.91	-0.88	-2.41	2.6	249.9	4.9	253.8
45.00	44.90	-0.90	-2.50	2.7	250.1	5.2	257.5
46.00	45.90	-0.92	-2.59	2.8	250.4	5.2	259.2
47.00	46.90	-0.94	-2.68	2.8	250.6	5.4	272.4
48.00	47.89	-0.96	-2.77	2.9	250.9	5.9	254.8
49.00	48.89	-0.98	-2.87	3.0	251.1	6.1	253.3
50.00	49.88	-1.01	-2.98	3.1	251.3	6.0	259.0
51.00	50.87	-1.04	-3.08	3.2	251.4	6.0	256.0
52.00	51.87	-1.06	-3.18	3.4	251.5	5.9	256.1
53.00	52.86	-1.09	-3.28	3.5	251.7	5.5	252.6
54.00	53.86	-1.11	-3.38	3.6	251.8	6.0	252.5
55.00	54.85	-1.13	-3.48	3.7	252.0	7.0	258.6
56.00	55.85	-1.15	-3.59	3.8	252.3	5.8	259.6
57.00	56.84	-1.16	-3.70	3.9	252.5	5.8	268.8
58.00	57.83	-1.19	-3.80	4.0	252.6	5.4	250.4
59.00	58.83	-1.21	-3.90	4.1	252.7	6.0	259.0
60.00	59.82	-1.24	-4.00	4.2	252.8	6.0	254.8
61.00	60.82	-1.26	-4.10	4.3	252.9	6.0	255.8
62.00	61.81	-1.28	-4.20	4.4	253.0	6.1	257.7
63.00	62.81	-1.30	-4.30	4.5	253.2	5.9	265.3
64.00	63.80	-1.31	-4.40	4.6	253.4	6.1	262.3
65.00	64.80	-1.33	-4.51	4.7	253.6	6.2	260.0
66.00	65.79	-1.35	-4.62	4.8	253.7	6.3	266.2
67.00	66.78	-1.37	-4.72	4.9	253.9	6.2	258.8
68.00	67.78	-1.39	-4.82	5.0	253.9	5.5	273.0
69.00	68.77	-1.40	-4.92	5.1	254.1	5.9	264.5
70.00	69.77	-1.41	-5.03	5.2	254.4	6.4	266.1
71.00	70.76	-1.42	-5.14	5.3	254.6	6.8	264.2
72.00	71.75	-1.43	-5.26	5.5	254.8	6.6	265.0
73.00	72.75	-1.45	-5.37	5.6	254.9	6.6	266.2
74.00	73.74	-1.46	-5.48	5.7	255.1	6.1	262.7
75.00	74.74	-1.47	-5.59	5.8	255.3	5.8	265.1
76.00	75.73	-1.48	-5.70	5.9	255.4	6.6	258.6
77.00	76.72	-1.50	-5.82	6.0	255.5	6.7	252.5
78.00	77.72	-1.52	-5.93	6.1	255.6	6.9	256.5
79.00	78.71	-1.53	-6.04	6.2	255.8	7.1	243.5
80.00	79.70	-1.55	-6.16	6.4	255.9	7.0	255.5
81.00	80.66	-1.56	-6.26	6.5	256.0	6.2	245.5
81.00	80.66	-1.56	-6.26	6.5	256.0	6.2	245.5

Century WIRELINE SERVICES

GAMMA - NEUTRON THROUGH RODS CM11-08

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-08
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:BRITISH COLUMBIA

OTHER SERVICES:
DEN
DEV
DEN TR

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:08/23/12	RIG NUMBER	:GED
DEPTH DRILLER	:82.00	LOGGER TD	:81.70
BIT SIZE	:120.65	ARRIVAL TIME	:15:00
LOG TOP	:0.00	DEPARTURE TIME	:18:30
LOG BOTTOM	:77.09	CIRC STOPPED	:N/A
CASING LOGGER	:3.30		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:M. ESKRICK		
RECORDED BY	:M. LEBEDA		
REMARKS 1	:VERTICAL		
REMARKS 2	:PIPE SET @ 78.6M		

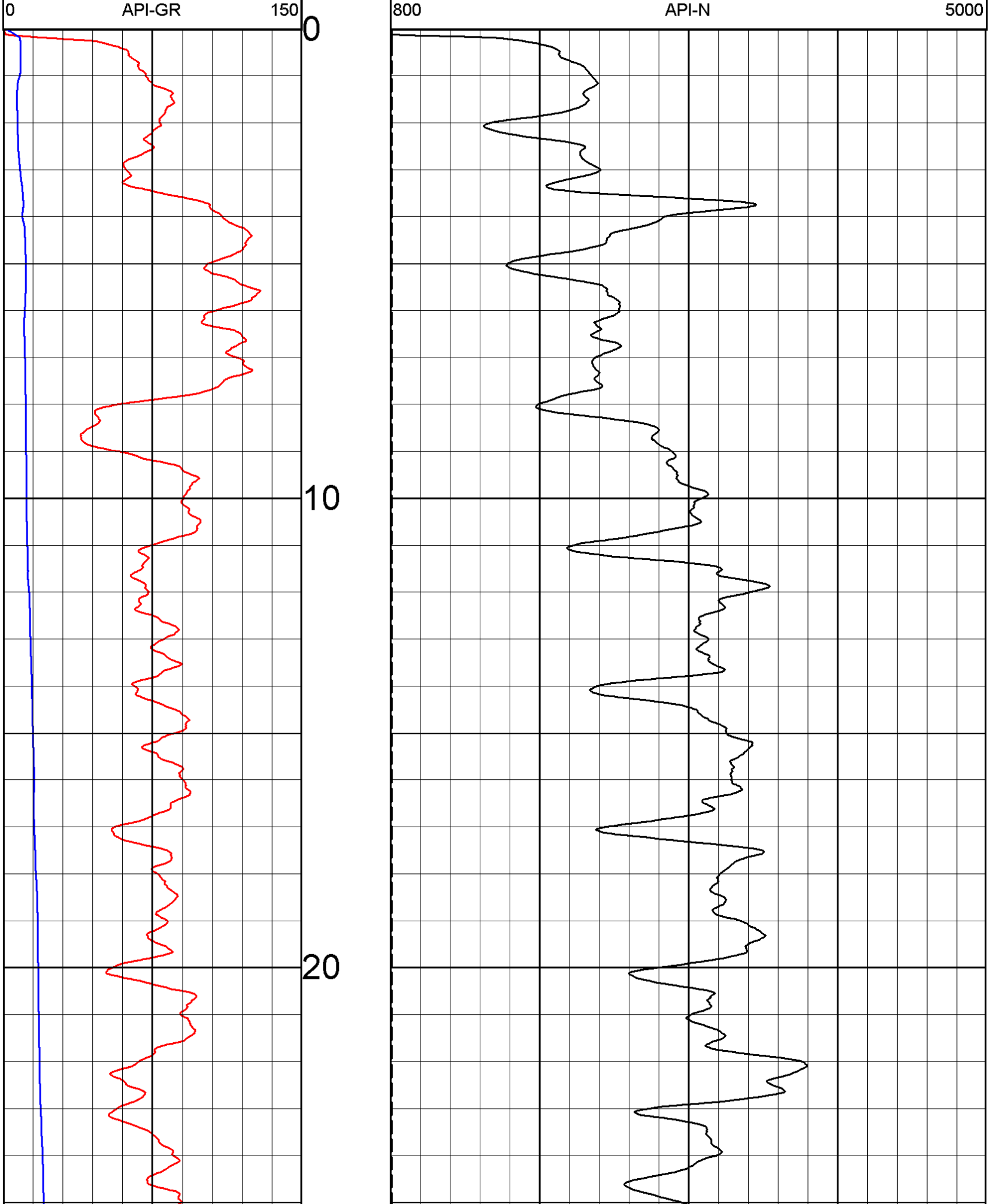
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAMMA NEUTRON TR 1:100 CM11-08 08/23/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR-TOP.0 08/22/2012		VERSION = 3.64KF	

SANG	METERS	NEUTRON
DEG	API-N	NEUTRON
0 30	5000 6200	
GAMMA		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API-GR
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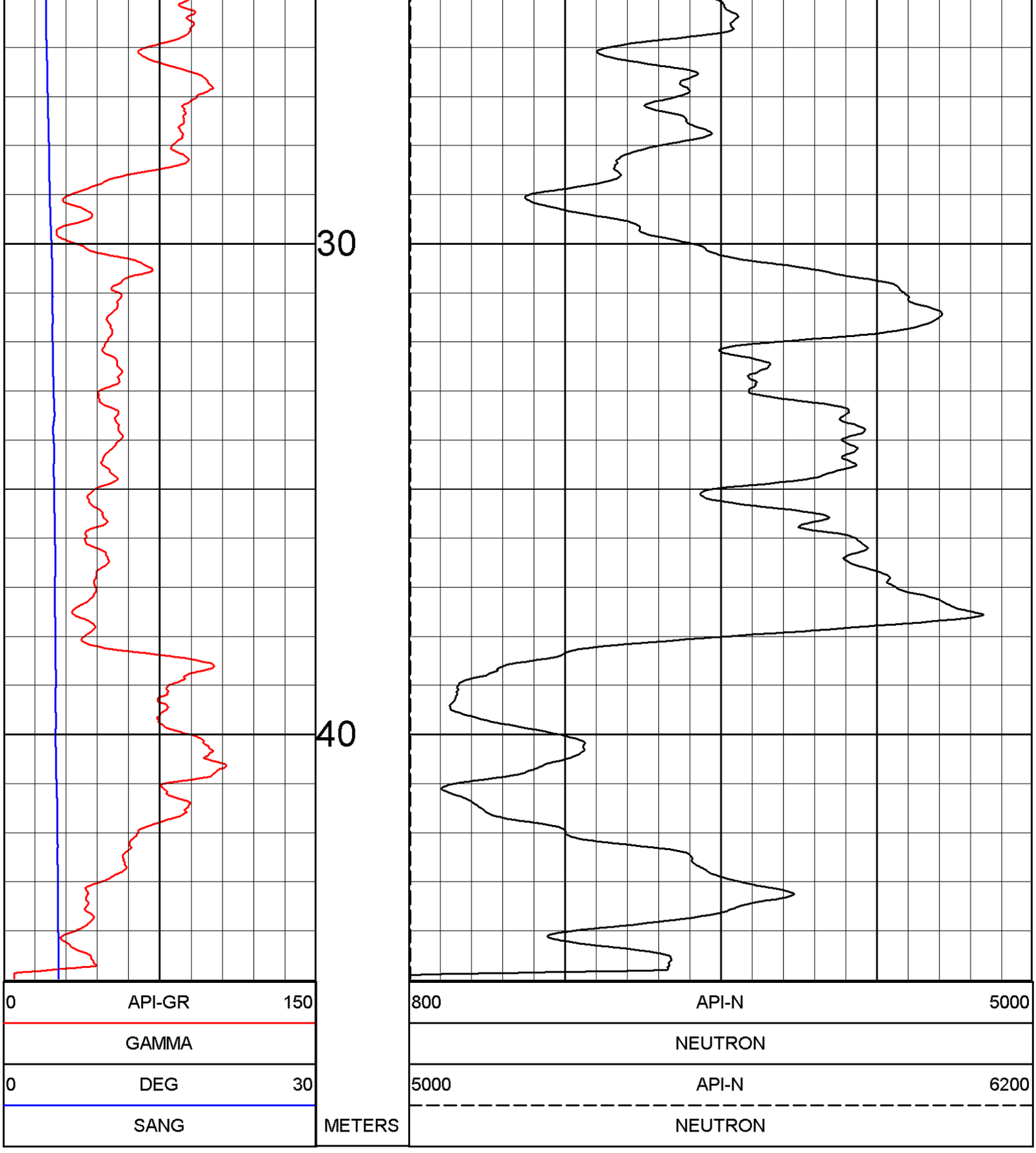
800
API-N
5000
0
10
20



GAMMA NEUTRON TR 1:100 CM11-08 08/23/12

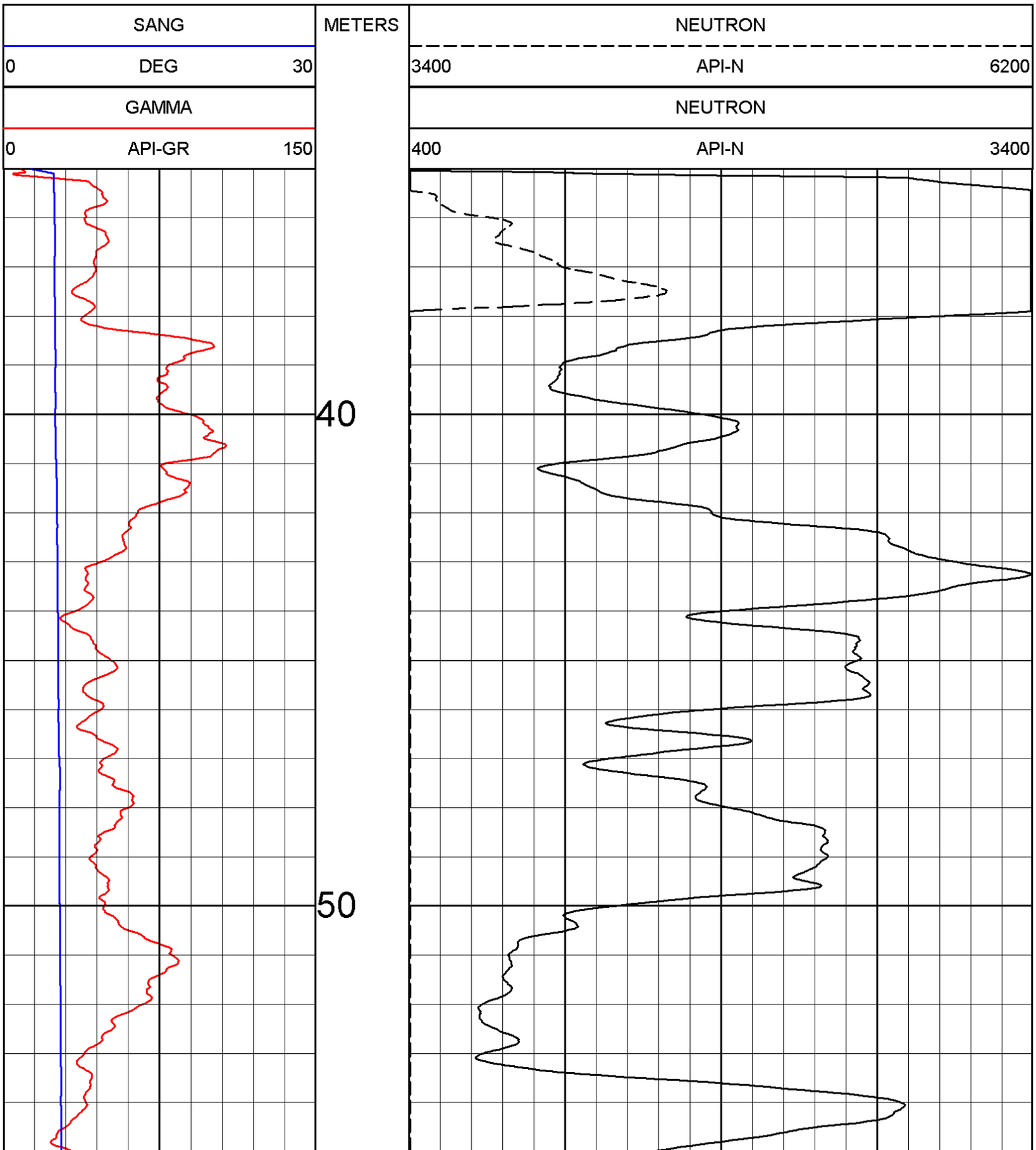
LOG PARAMETERS

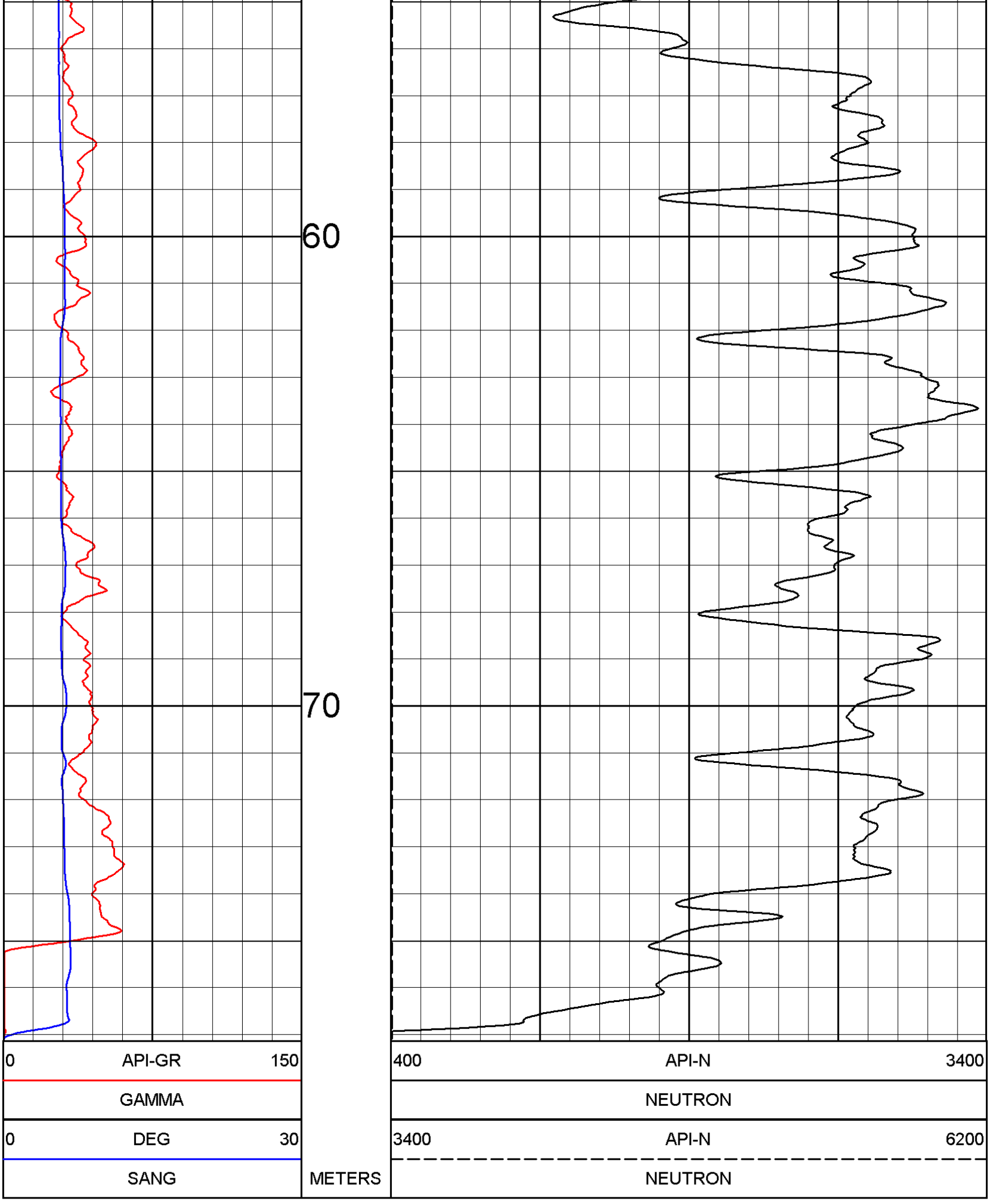
MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR-TOP.0 08/22/2012		VERSION = 3.64KF

GAMMA NEUTRON TR :100 CM11-08 08/23/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/23/2012		VERSION = 3.64KF




60
70
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API-GR
150
GAMMA
0
DEG
30
SANG
METERS
400
API-N
3400
NEUTRON
3400
API-N
6200
NEUTRON

GAMMA NEUTRON TR :100 CM11-08 08/23/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/23/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-08 08/23/12 15:51
TOOL 9058A TM VERSION 3
SERIAL NUMBER 2631

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	May15,12	10:05:16	GAMMA	0.000	[API-GR]	3.000	[CPS]
	May15,12	10:05:16	GAMMA	545.000	[API-GR]	560.000	[CPS]
2	Jan19,12	10:47:24	TEMP	3.500	[DEG_F]	330443.000	[CPS]
	Jan19,12	10:47:24	TEMP	51.000	[DEG_F]	396853.000	[CPS]
3	May15,12	10:19:19	NEUTROI	Default	[CPS]	Default	[CPS]
	May15,12	10:19:19	NEUTRC	271.000	[API-N]	94.000	[CPS]
4	May16,11	09:08:18	POR(NEI	100.000	[PERCENT]	35.000	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-11

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-11
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:BRITISH COLUMBIA

OTHER SERVICES:
DEV
DEN TR
NEU TR

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

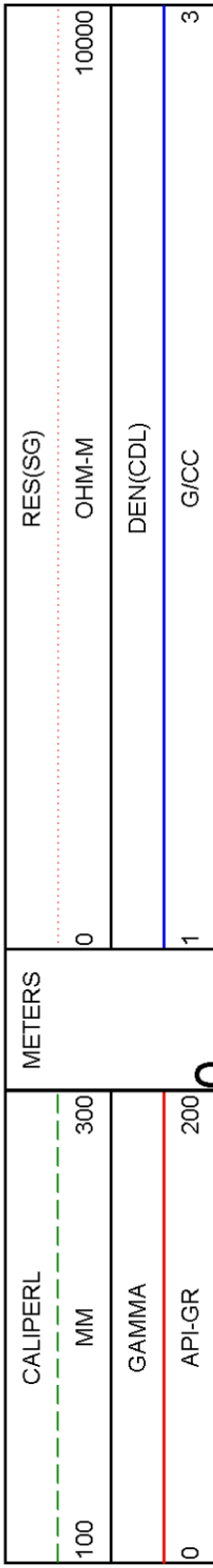
DATE	:08/23/12	RIG NUMBER	:GED
DEPTH DRILLER	:142.00	LOGGER TD	:142.20
BIT SIZE	:120.65	ARRIVAL TIME	:05:00
LOG TOP	:0.00	DEPARTURE TIME	:07:30
LOG BOTTOM	:141.97	CIRC STOPPED	:N/A
CASING LOGGER	:3.40		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:M. ESKRICK		
RECORDED BY	:M. LEBEDA		
REMARKS 1	:VERTICAL		
REMARKS 2	:WATER LEVEL @ 37.3M		

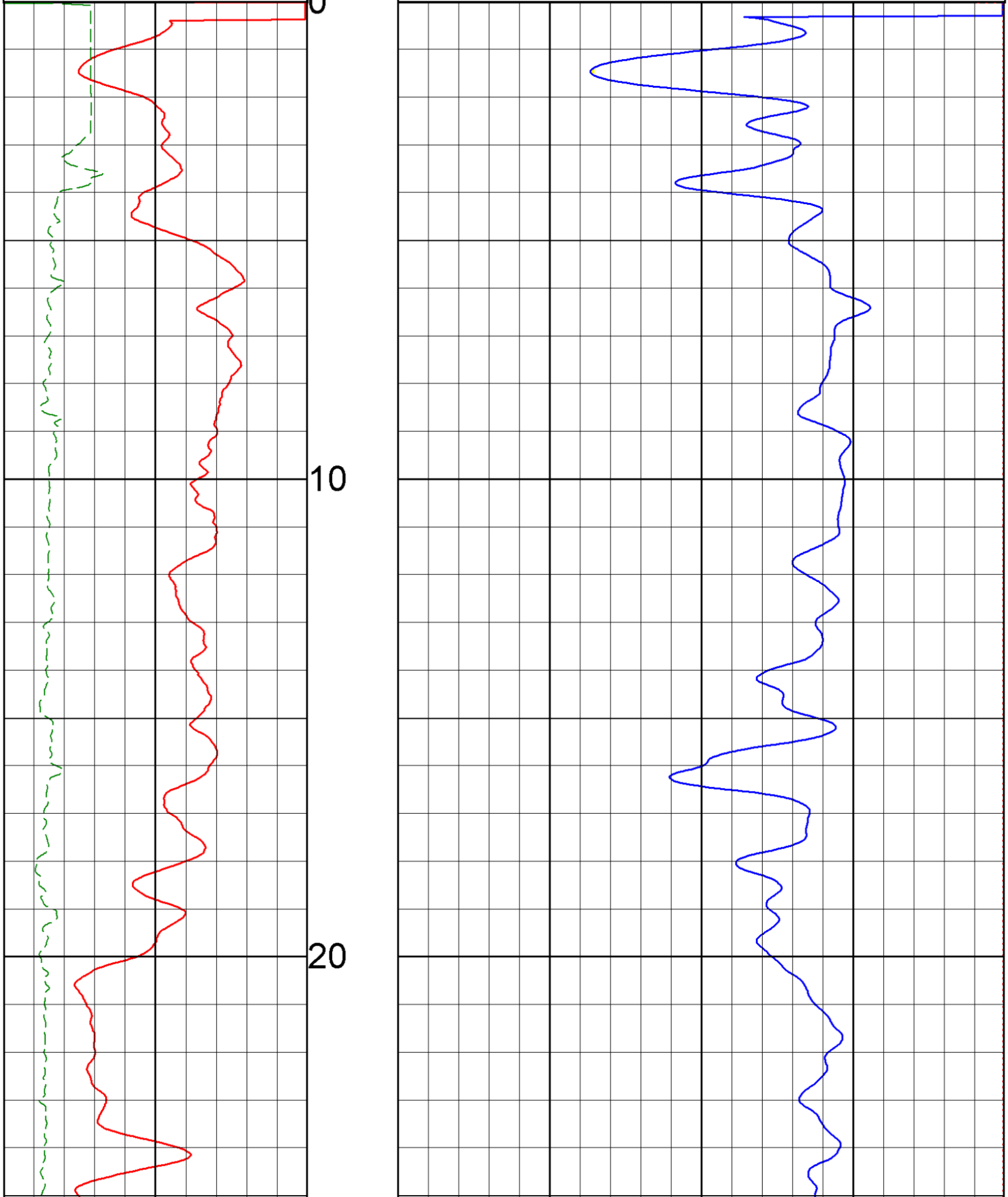
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAMMA DENSITY 1:100 CM11-11 08/23/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/23/2012		VERSION = 3.64KF	

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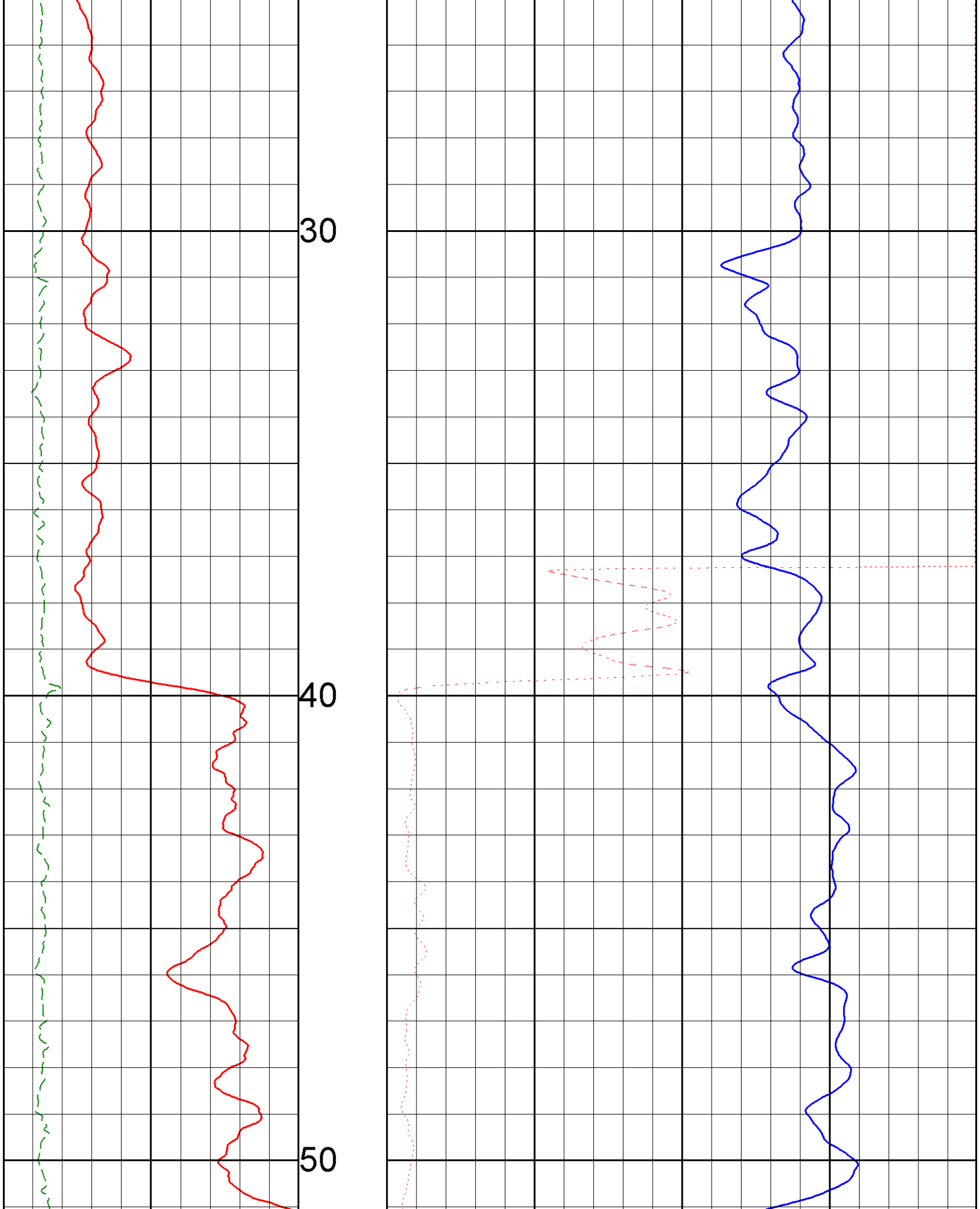
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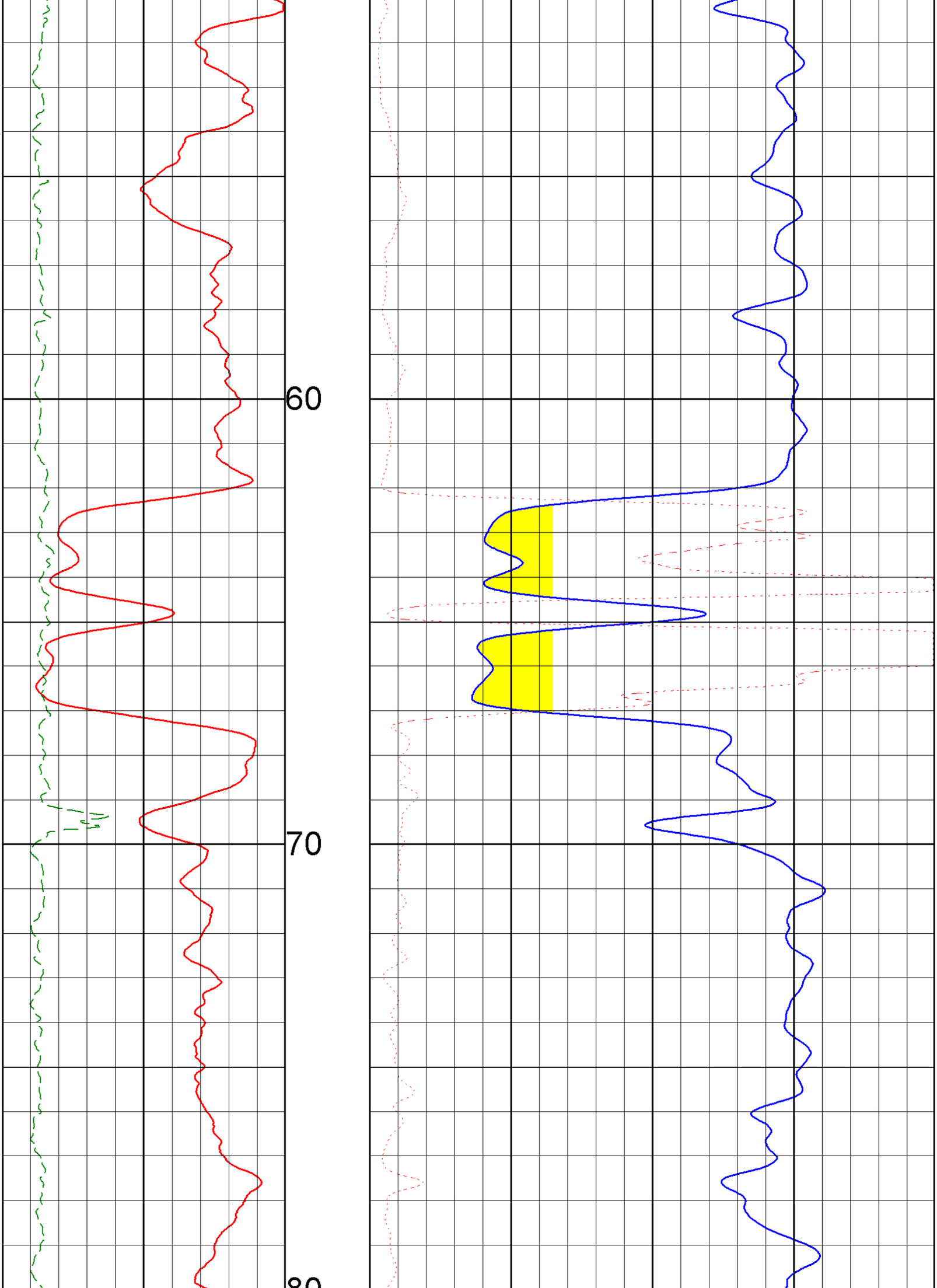
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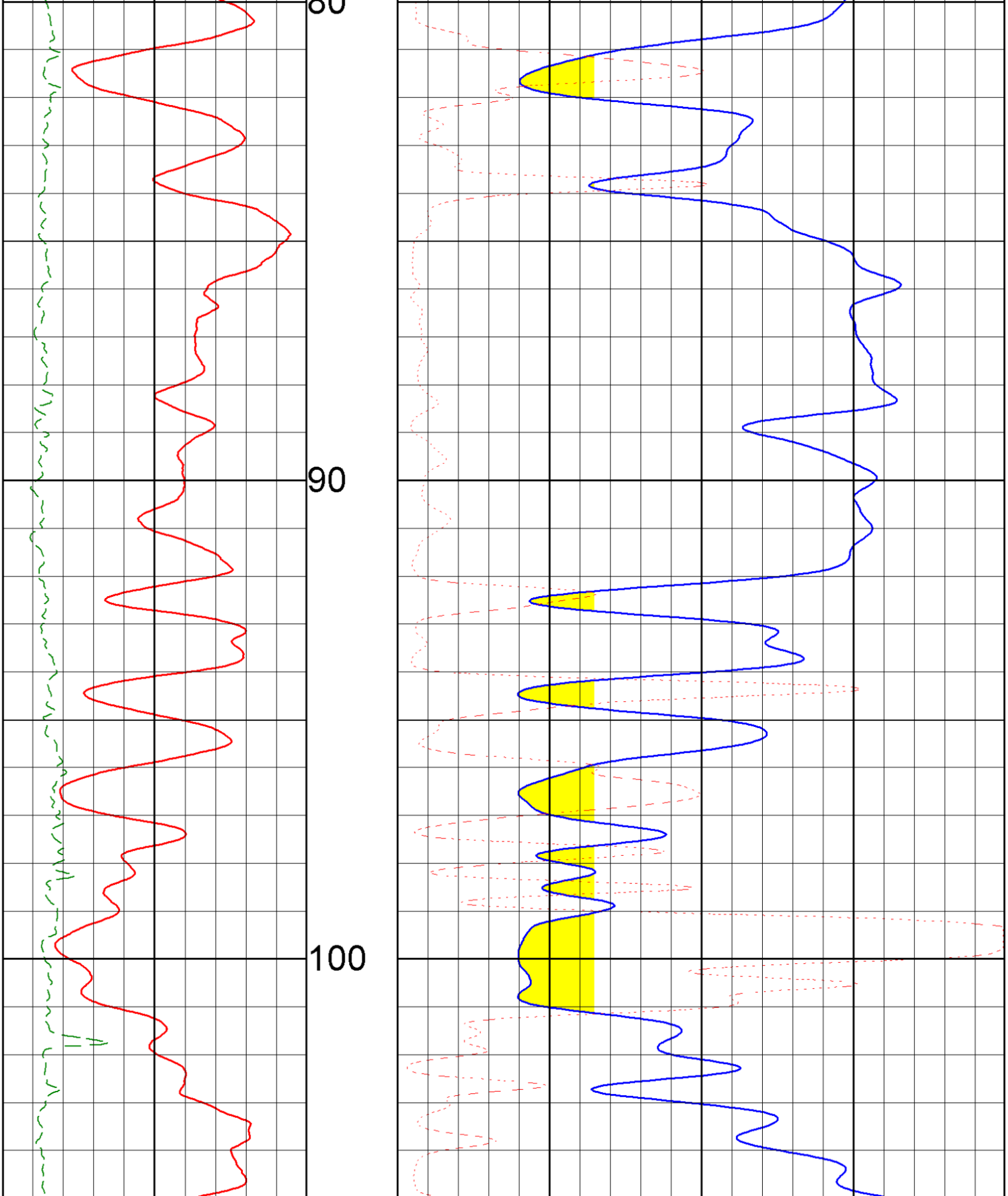
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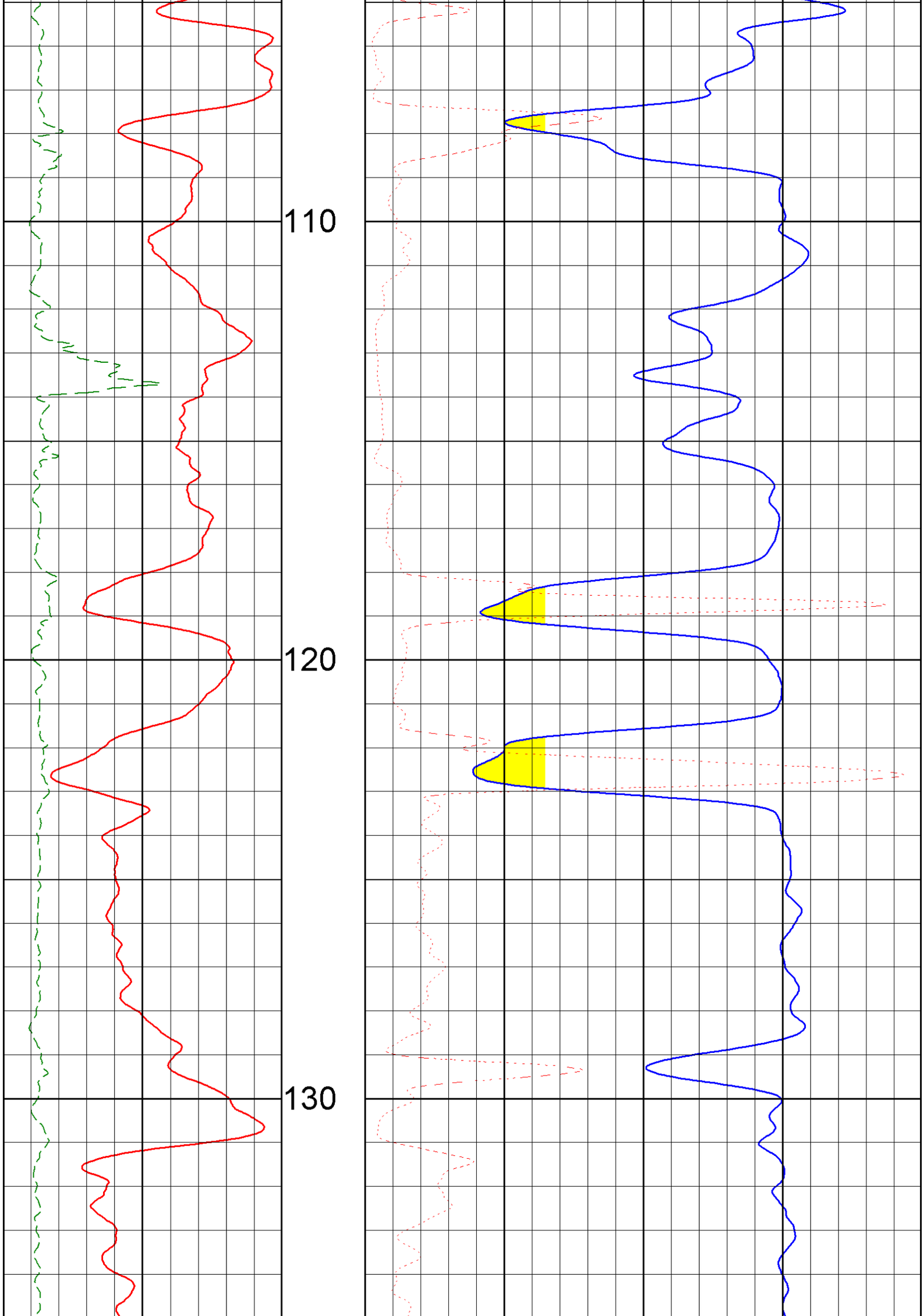
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120
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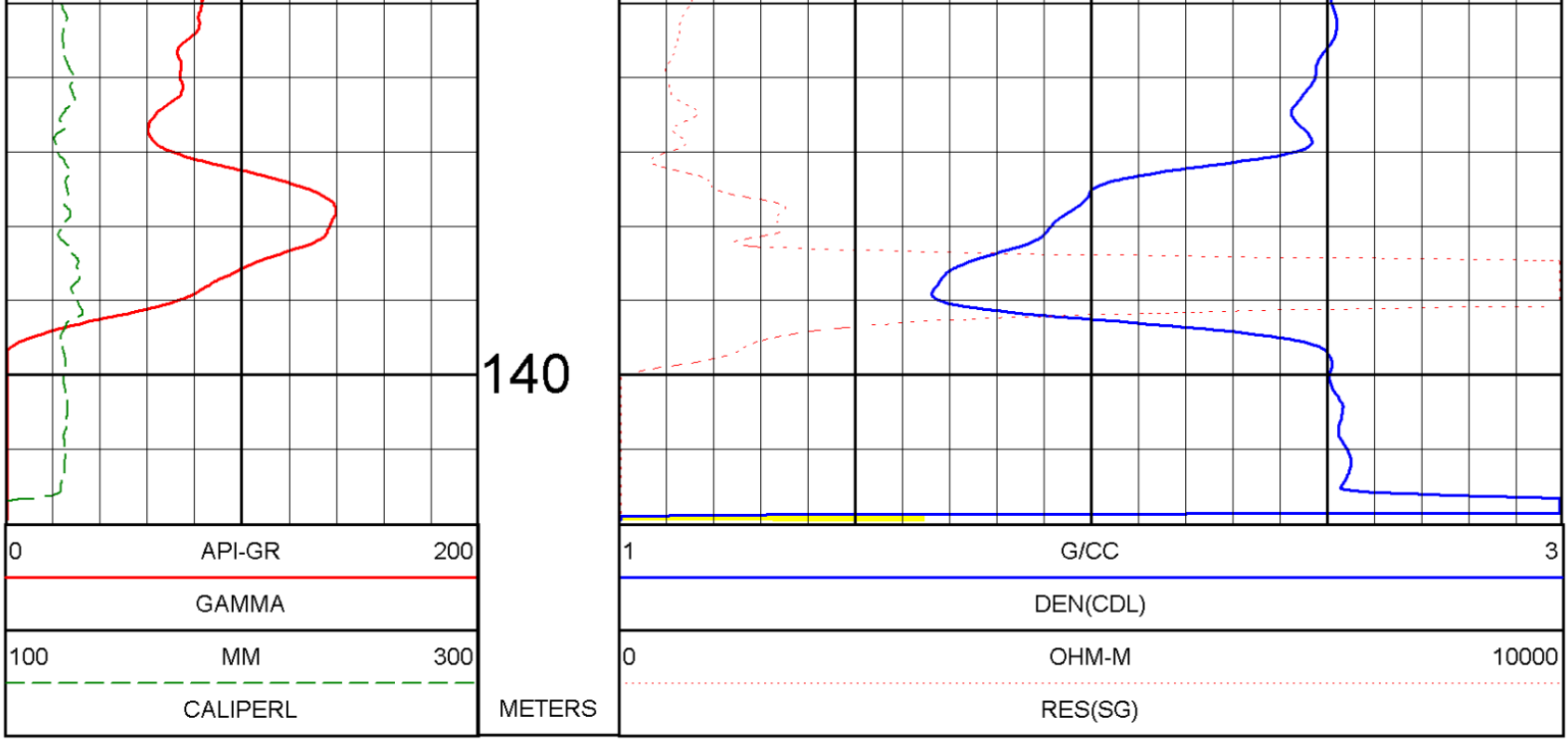


GAMMA DENSITY 1:100 CM11-11 08/23/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/23/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-11 08/23/12 06:13
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 2404

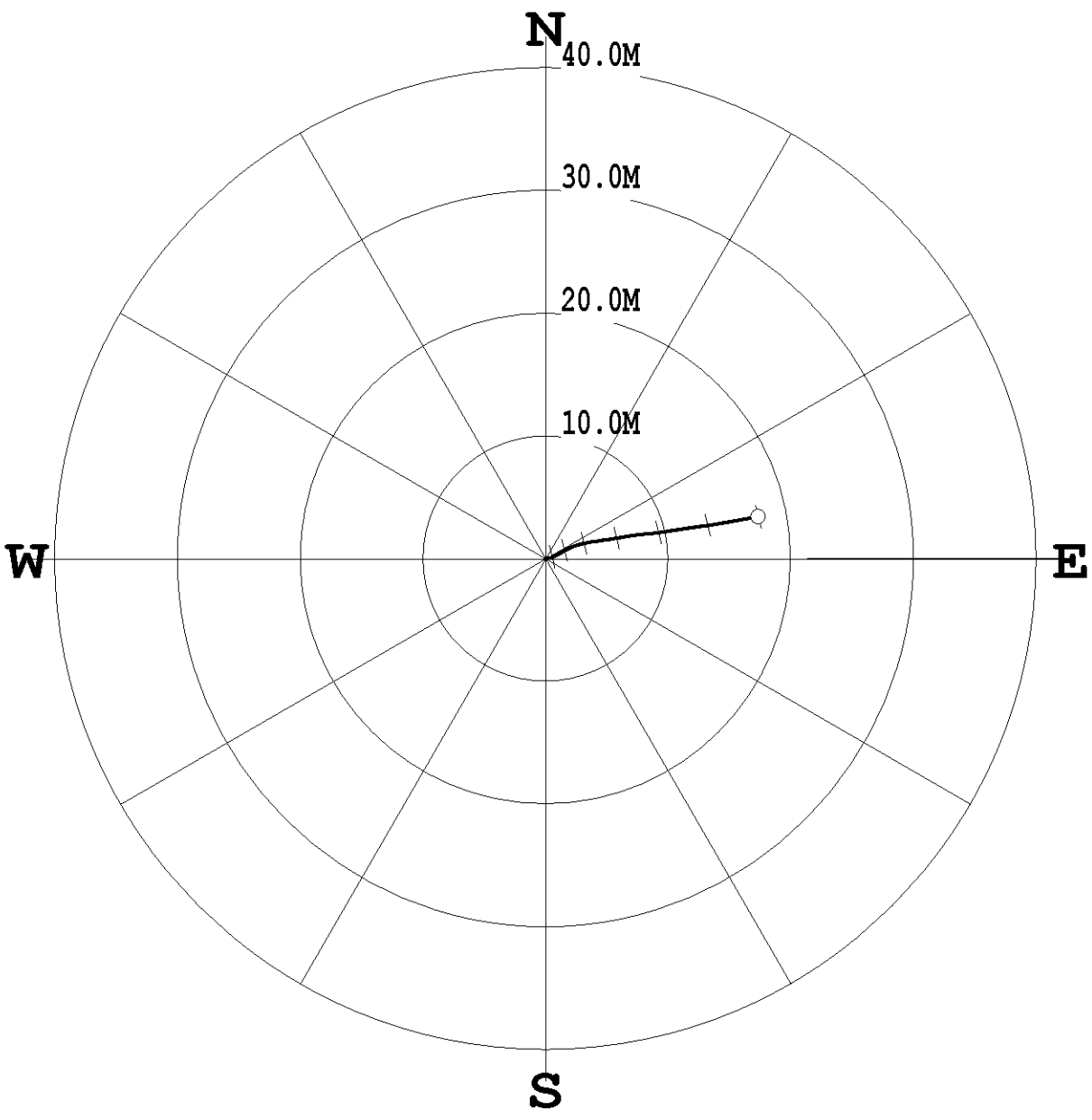
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Jun02,12	16:01:05	GAMMA	0.000	[API-GR]	4.000	[CPS]
	Jun02,12	16:01:05	GAMMA	545.000	[API-GR]	635.000	[CPS]
2	Jun02,12	16:20:27	VOLTAGE	23.000	[MV]	6860.000	[CPS]
	Jun02,12	16:20:27	VOLTAGE	225.000	[MV]	34055.000	[CPS]
3	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
4	Jun02,12	16:01:58	DEN(LS)	1.620	[G/CC]	13852.000	[CPS]
	Jun02,12	16:01:58	DEN(LS)	2.612	[G/CC]	1895.000	[CPS]
5	Jun02,12	16:02:26	DEN(SS)	1.590	[G/CC]	45738.000	[CPS]
	Jun02,12	16:02:26	DEN(SS)	2.580	[G/CC]	18052.000	[CPS]
6	Jul02,12	19:44:14	CALIPERL	100.000	[MM]	236854.000	[CPS]
	Jul02,12	19:44:14	CALIPERL	200.000	[MM]	339407.000	[CPS]
7	Jun02,12	16:20:44	CURRENT	23.000	[UA]	2925.000	[CPS]
	Jun02,12	16:20:44	CURRENT	225.000	[UA]	18770.000	[CPS]
8	Jun02,12	16:00:49	F	Default	[CPS]		
9	Jun02,12	16:00:49	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-11
DATE OF LOG: 08/23/12
PROBE: 9058A 2631

MAG DECL: 15.0

SCALE: 5 M/CM
TRUE DEPTH: 139.55 M
AZIMUTH: 78.8
DISTANCE: 17.6 M
+ = 20 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM11-11
FIELD OFFICE : CENTURY GEO DATE OF LOG : 08/23/12
DATA FROM : N/A PROBE : 9058A , 2631
MAG. DECL. : 15.000 DEPTH UNITS : METERS
LOG: CM11-11_08-23-12_05-39_9058A_.02_5.00_141.00_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
5.02	5.02	0.00	0.00	0.0	70.6	1.4	70.6
6.00	6.00	0.01	0.02	0.0	75.5	1.6	74.4
7.00	7.00	0.01	0.05	0.1	75.7	1.6	75.2
8.00	8.00	0.02	0.08	0.1	75.9	1.8	74.2
9.00	9.00	0.03	0.11	0.1	76.4	1.4	74.8
10.00	10.00	0.03	0.14	0.1	77.1	2.1	82.5
11.00	11.00	0.04	0.17	0.2	77.7	2.1	71.9
12.00	12.00	0.04	0.21	0.2	78.1	2.0	74.4
13.00	13.00	0.05	0.25	0.3	78.3	2.0	77.5
14.00	13.99	0.06	0.29	0.3	78.1	2.4	70.9
15.00	14.99	0.07	0.33	0.3	77.7	2.6	74.7
16.00	15.99	0.08	0.37	0.4	77.4	2.0	71.8
17.00	16.99	0.09	0.41	0.4	76.9	2.4	64.4
18.00	17.99	0.11	0.45	0.5	76.4	2.3	58.2
19.00	18.99	0.12	0.49	0.5	75.6	2.7	61.0
20.00	19.99	0.14	0.53	0.5	74.9	2.7	62.2
21.00	20.99	0.16	0.58	0.6	74.5	2.8	68.0
22.00	21.99	0.18	0.62	0.6	74.0	2.7	65.8
23.00	22.99	0.20	0.67	0.7	73.5	2.8	61.9
24.00	23.98	0.22	0.71	0.7	72.9	2.8	61.7
25.00	24.98	0.24	0.76	0.8	72.2	3.0	63.5
26.00	25.98	0.27	0.80	0.8	71.5	3.2	64.2
27.00	26.98	0.30	0.85	0.9	70.8	3.2	62.7
28.00	27.98	0.33	0.91	1.0	70.2	3.4	62.6
29.00	28.98	0.35	0.96	1.0	69.7	3.5	64.8
30.00	29.97	0.38	1.01	1.1	69.5	3.2	62.2
31.00	30.97	0.40	1.07	1.1	69.3	3.5	67.1
32.00	31.97	0.43	1.12	1.2	69.1	2.8	64.9
33.00	32.97	0.45	1.16	1.2	68.8	3.1	60.6
34.00	33.97	0.48	1.21	1.3	68.4	2.8	62.0
35.00	34.97	0.51	1.25	1.4	68.1	3.3	57.7
36.00	35.97	0.54	1.31	1.4	67.7	3.7	61.0
37.00	36.96	0.57	1.36	1.5	67.3	4.2	55.1
38.00	37.96	0.60	1.42	1.5	67.0	4.0	56.9
39.00	38.96	0.64	1.48	1.6	66.8	3.6	56.4
40.00	39.96	0.67	1.53	1.7	66.6	3.4	64.4
41.00	40.95	0.70	1.59	1.7	66.4	4.0	62.9
42.00	41.95	0.73	1.65	1.8	66.1	4.2	61.8
43.00	42.95	0.77	1.72	1.9	65.9	4.5	68.0
44.00	43.95	0.80	1.79	2.0	65.8	4.5	59.9
45.00	44.94	0.84	1.85	2.0	65.6	4.4	58.3
46.00	45.94	0.87	1.92	2.1	65.5	4.4	65.6
47.00	46.94	0.91	2.00	2.2	65.6	4.5	62.7
48.00	47.93	0.94	2.07	2.3	65.6	4.6	70.4
49.00	48.93	0.97	2.14	2.3	65.7	4.5	75.3
50.00	49.93	0.99	2.21	2.4	65.8	4.4	68.0
51.00	50.92	1.02	2.29	2.5	65.9	4.6	66.6
52.00	51.92	1.05	2.36	2.6	66.0	4.5	71.1
53.00	52.92	1.08	2.44	2.7	66.2	4.7	69.3
54.00	53.91	1.10	2.52	2.7	66.4	4.6	83.4
55.00	54.91	1.13	2.60	2.8	66.6	5.5	75.9
56.00	55.91	1.15	2.69	2.9	66.8	5.5	71.6
57.00	56.90	1.18	2.79	3.0	67.1	5.8	77.8
58.00	57.90	1.21	2.88	3.1	67.3	5.7	64.3
59.00	58.89	1.23	2.99	3.2	67.6	6.1	70.6
60.00	59.88	1.26	3.09	3.3	67.9	6.8	73.8
61.00	60.88	1.28	3.21	3.5	68.2	6.6	80.9
62.00	61.87	1.30	3.32	3.6	68.5	6.6	80.2
63.00	62.86	1.33	3.43	3.7	68.8	6.7	81.1
64.00	63.86	1.35	3.55	3.8	69.2	6.4	81.9
65.00	64.85	1.37	3.66	3.9	69.5	6.9	80.5
66.00	65.84	1.39	3.78	4.0	69.8	6.6	81.5
67.00	66.84	1.40	3.89	4.1	70.2	6.0	95.7
68.00	67.83	1.42	4.03	4.3	70.6	8.3	82.6
69.00	68.82	1.44	4.17	4.4	71.0	8.3	83.8
70.00	69.81	1.46	4.31	4.6	71.3	8.2	79.5
71.00	70.80	1.48	4.45	4.7	71.6	7.8	75.6
72.00	71.79	1.50	4.59	4.8	71.8	7.6	84.6
73.00	72.78	1.52	4.72	5.0	72.1	7.8	80.7
74.00	73.77	1.54	4.85	5.1	72.4	8.0	82.0
75.00	74.76	1.56	4.99	5.2	72.6	8.5	83.2
76.00	75.75	1.58	5.13	5.4	72.9	8.2	82.7
77.00	76.74	1.60	5.27	5.5	73.1	8.4	82.4
78.00	77.73	1.62	5.42	5.7	73.3	8.9	78.9
79.00	78.72	1.65	5.57	5.8	73.5	9.0	80.6
80.00	79.70	1.68	5.73	6.0	73.7	9.1	81.0
81.00	80.69	1.71	5.88	6.1	73.8	9.0	84.3
82.00	81.68	1.73	6.03	6.3	74.0	8.9	80.1
83.00	82.67	1.75	6.19	6.4	74.2	9.0	81.9
84.00	83.65	1.78	6.34	6.6	74.3	9.1	79.1
85.00	84.64	1.81	6.50	6.7	74.5	10.0	74.3
86.00	85.63	1.84	6.67	6.9	74.6	10.0	79.1
87.00	86.61	1.86	6.84	7.1	74.8	10.0	81.4
88.00	87.60	1.89	7.01	7.3	74.9	10.1	80.0
89.00	88.58	1.92	7.19	7.4	75.1	9.9	81.3
90.00	89.57	1.95	7.36	7.6	75.2	9.9	79.7
91.00	90.55	1.97	7.54	7.8	75.3	10.2	81.8
92.00	91.53	1.99	7.71	8.0	75.5	9.9	85.4
93.00	92.52	2.00	7.88	8.1	75.8	10.3	84.9
94.00	93.50	2.01	8.06	8.3	76.0	10.4	85.2
95.00	94.49	2.03	8.23	8.5	76.1	10.0	83.7
96.00	95.47	2.05	8.41	8.7	76.3	10.0	83.8
97.00	96.46	2.06	8.58	8.8	76.5	9.9	84.3
98.00	97.44	2.08	8.75	9.0	76.6	9.9	84.6
99.00	98.43	2.10	8.92	9.2	76.8	9.9	83.2
100.00	99.41	2.12	9.09	9.3	76.9	9.9	83.3
101.00	100.40	2.14	9.26	9.5	77.0	10.0	81.9
102.00	101.38	2.16	9.43	9.7	77.1	10.0	81.9
103.00	102.37	2.19	9.61	9.9	77.2	10.1	74.4
104.00	103.35	2.22	9.79	10.0	77.2	10.7	78.5
105.00	104.33	2.25	9.97	10.2	77.3	10.9	79.9
106.00	105.31	2.28	10.16	10.4	77.4	10.8	81.6
107.00	106.30	2.31	10.34	10.6	77.4	11.8	75.8
108.00	107.28	2.34	10.54	10.8	77.5	11.5	83.1
109.00	108.25	2.37	10.74	11.0	77.6	12.1	81.5
110.00	109.23	2.40	10.95	11.2	77.6	11.7	82.2
111.00	110.21	2.43	11.15	11.4	77.7	11.8	81.3
112.00	111.19	2.46	11.35	11.6	77.8	12.0	79.6
113.00	112.17	2.49	11.55	11.8	77.8	12.0	80.7
114.00	113.15	2.53	11.76	12.0	77.9	12.2	79.9
115.00	114.12	2.56	11.97	12.2	77.9	12.0	81.3
116.00	115.10	2.59	12.18	12.4	78.0	11.9	81.6
117.00	116.08	2.61	12.39	12.7	78.1	12.2	80.9
118.00	117.06	2.64	12.59	12.9	78.2	12.0	82.0
119.00	118.04	2.66	12.80	13.1	78.2	11.7	82.5
120.00	119.02	2.68	13.00	13.3	78.3	11.4	82.4
121.00	120.00	2.71	13.19	13.5	78.4	12.1	73.3
122.00	120.97	2.74	13.40	13.7	78.4	12.1	80.6
123.00	121.95	2.78	13.60	13.9	78.4	12.3	79.0
124.00	122.93	2.82	13.81	14.1	78.5	12.2	80.5
125.00	123.91	2.85	14.02	14.3	78.5	12.1	79.8
126.00	124.89	2.89	14.23	14.5	78.5	11.8	81.9
127.00	125.86	2.92	14.43	14.7	78.6	12.1	81.0
128.00	126.84	2.96	14.64	14.9	78.6	11.9	79.5
129.00	127.82	2.99	14.84	15.1	78.6	11.9	79.3
130.00	128.80	3.03	15.05	15.4	78.6	12.2	80.3
131.00	129.77	3.07	15.26	15.6	78.6	12.3	79.3
132.00	130.75	3.10	15.47	15.8	78.7	12.2	80.2
133.00	131.73	3.14	15.68	16.0	78.7	12.2	80.0
134.00	132.71	3.18	15.88	16.2	78.7	12.1	80.0
135.00	133.68	3.21	16.09	16.4	78.7	12.1	80.6
136.00	134.66	3.25	16.30	16.6	78.7	12.3	79.3
137.00	135.64	3.28	16.51	16.8	78.7	12.2	81.1
138.00	136.62	3.31	16.71	17.0	78.8	12.1	83.8
139.00	137.60	3.35	16.91	17.2	78.8	12.1	79.5
140.00	138.57	3.38	17.12	17.4	78.8	11.8	80.5
141.00	139.51	3.41	17.31	17.6	78.8	11.8	80.7
141.00	139.51	3.41	17.31	17.6	78.8	11.8	80.7

Century WIRELINE SERVICES

GAMMA - NEUTRON THROUGH RODS CM11-11

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-11
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:BRITISH COLUMBIA

OTHER SERVICES:
DEN
DEV
DEN TR

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:08/22/12	RIG NUMBER	:GED
DEPTH DRILLER	:142.00	LOGGER TD	:142.20
BIT SIZE	:120.65	ARRIVAL TIME	:15:00
LOG TOP	:0.00	DEPARTURE TIME	:18:00
LOG BOTTOM	:140.16	CIRC STOPPED	:N/A
CASING LOGGER	:3.40		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:M. ESKRICK		
RECORDED BY	:M. LEBEDA		
REMARKS 1	:VERTICAL		
REMARKS 2	:PIPE SET @ 140.6M		

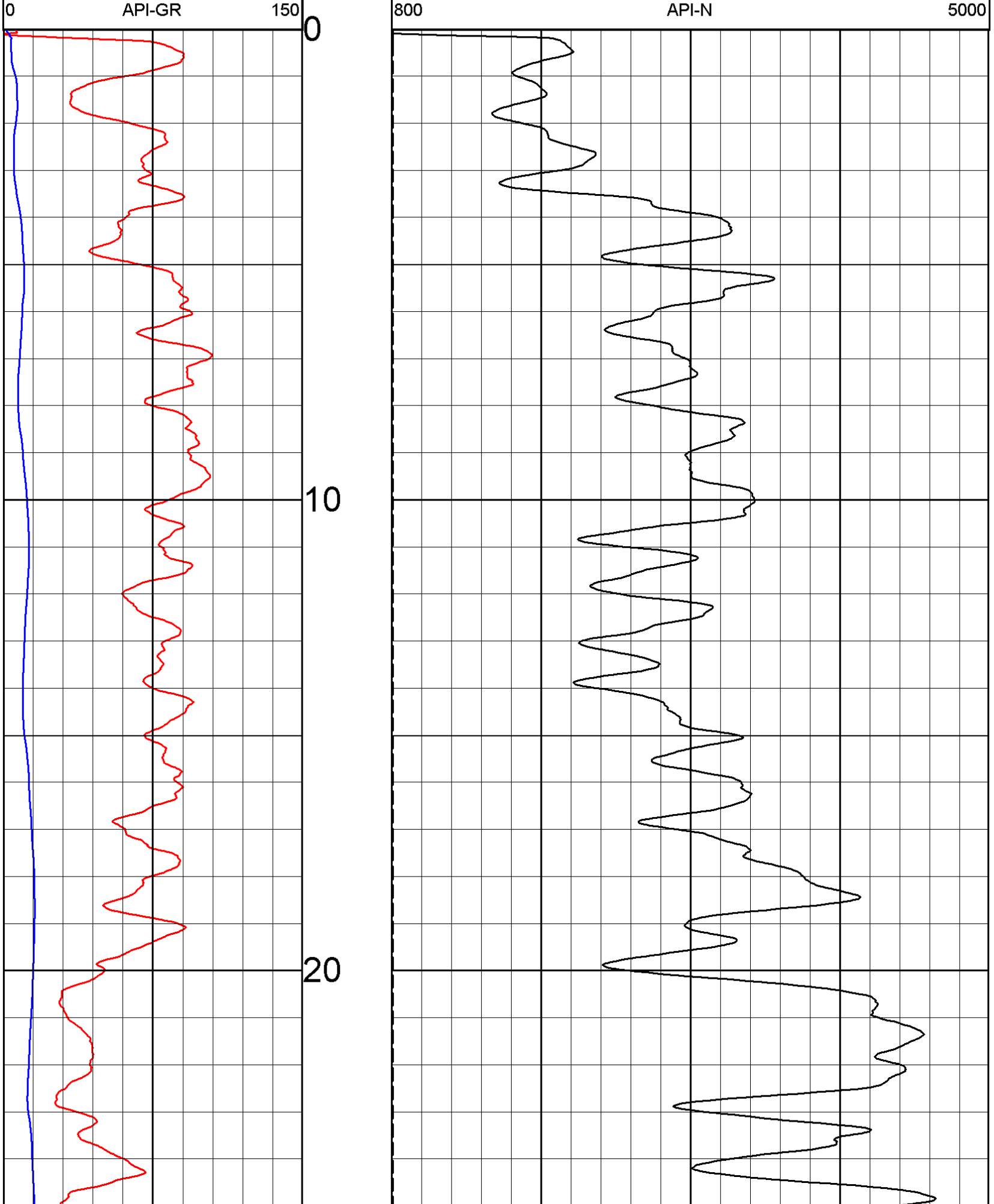
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAMMA NEUTRON TR 1:100 CM11-11 08/22/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR-TOP.0 08/22/2012		VERSION = 3.64KF	

SANG	METERS	NEUTRON
DEG	API-N	
0 30	5000 6200	
GAMMA		NEUTRON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API-N
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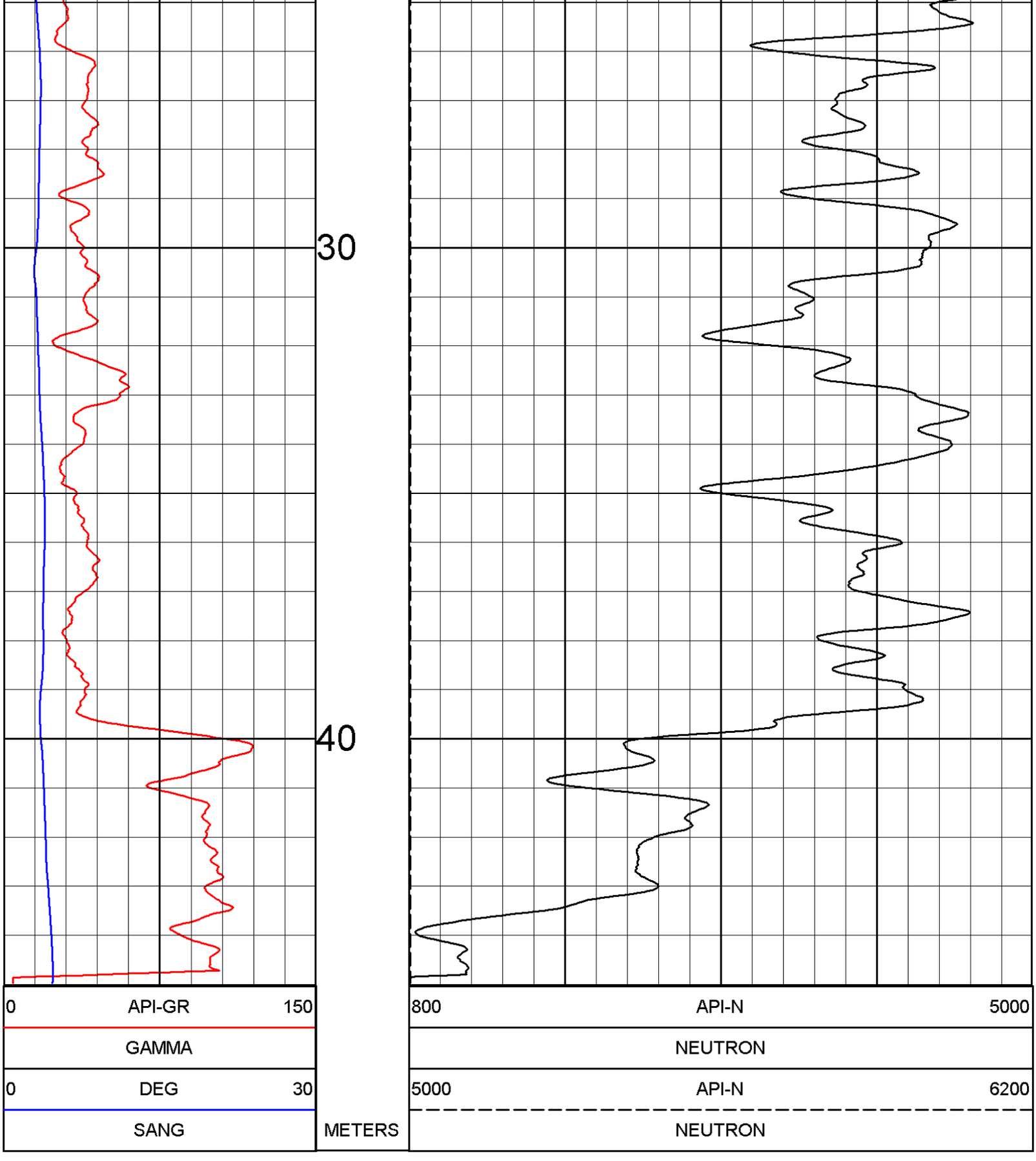
10
20



GAMMA NEUTRON TR 1:100 CM11-11 08/22/12

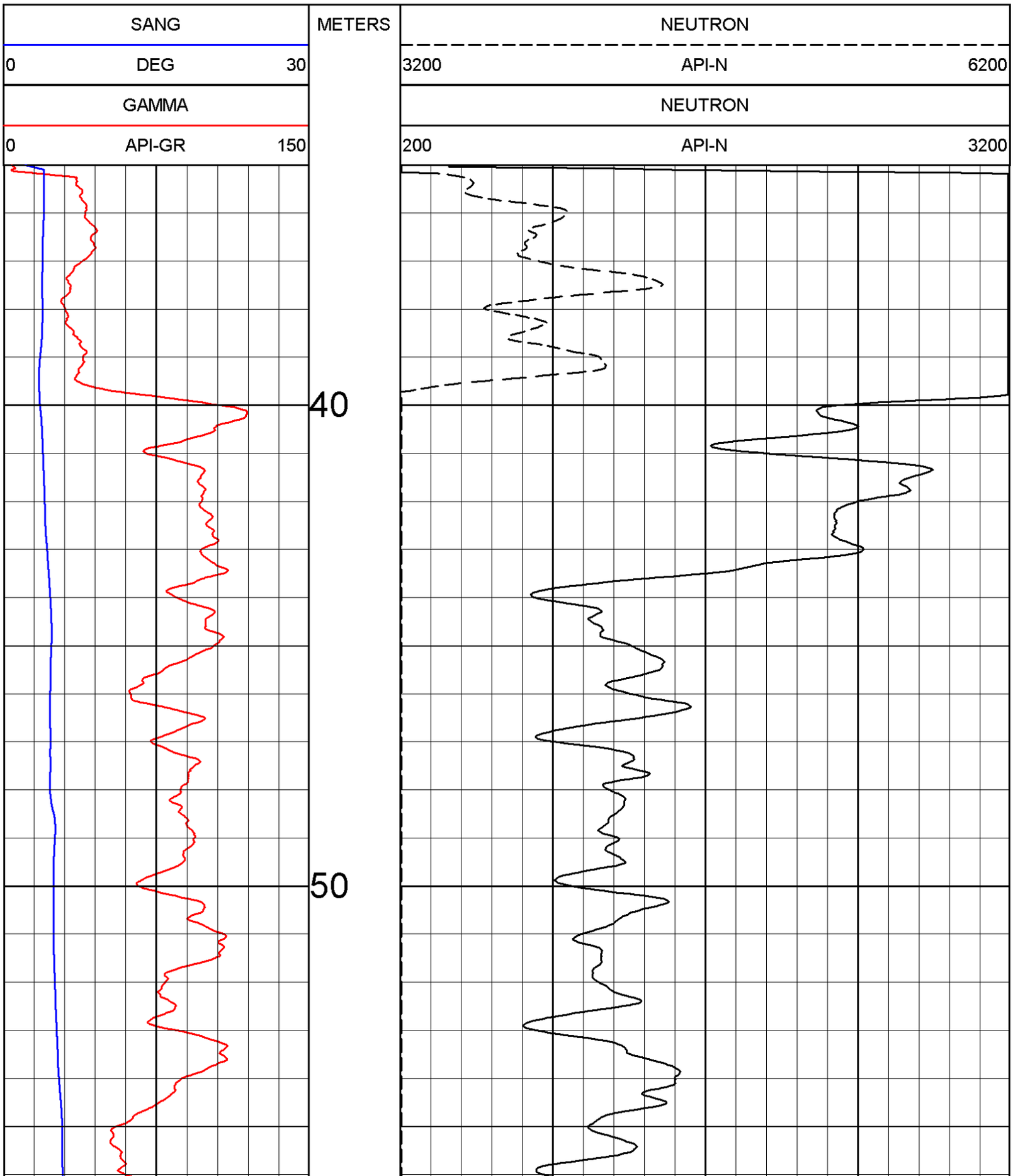
LOG PARAMETERS

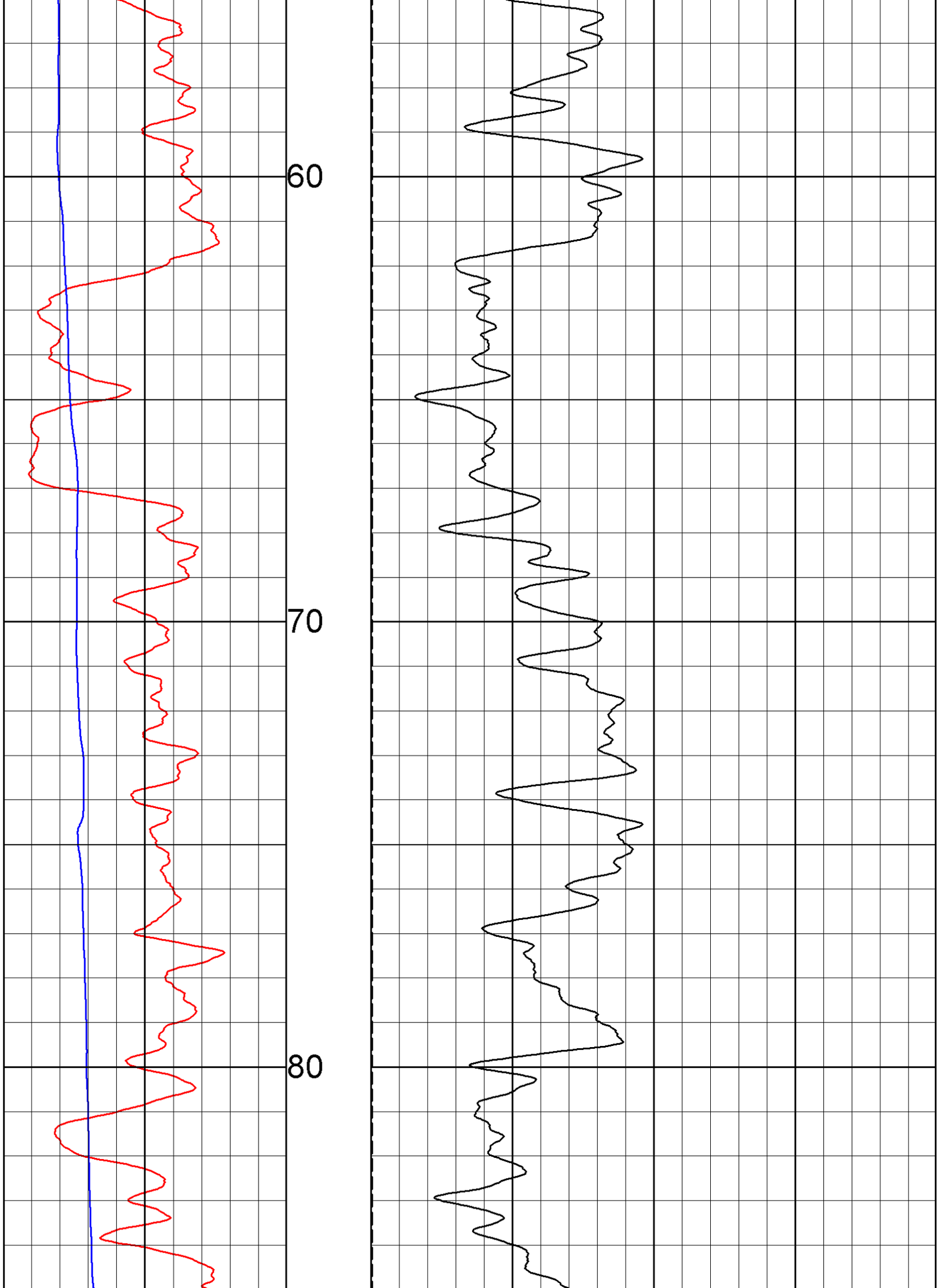
MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR-TOP.0 08/22/2012		VERSION = 3.64KF

GAMMA NEUTRON TR 1:100 CM11-11 08/22/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/22/2012		VERSION = 3.64KF

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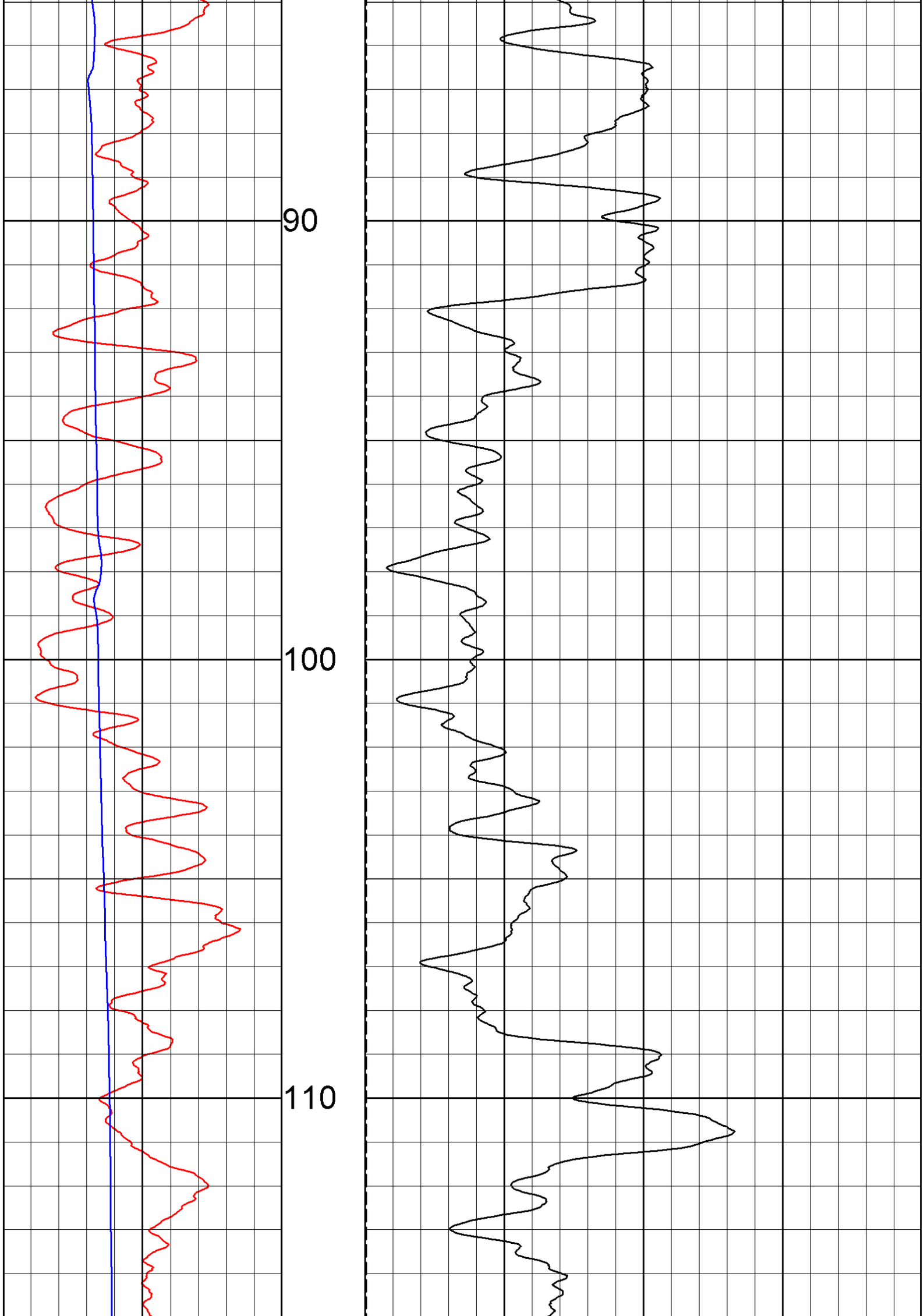
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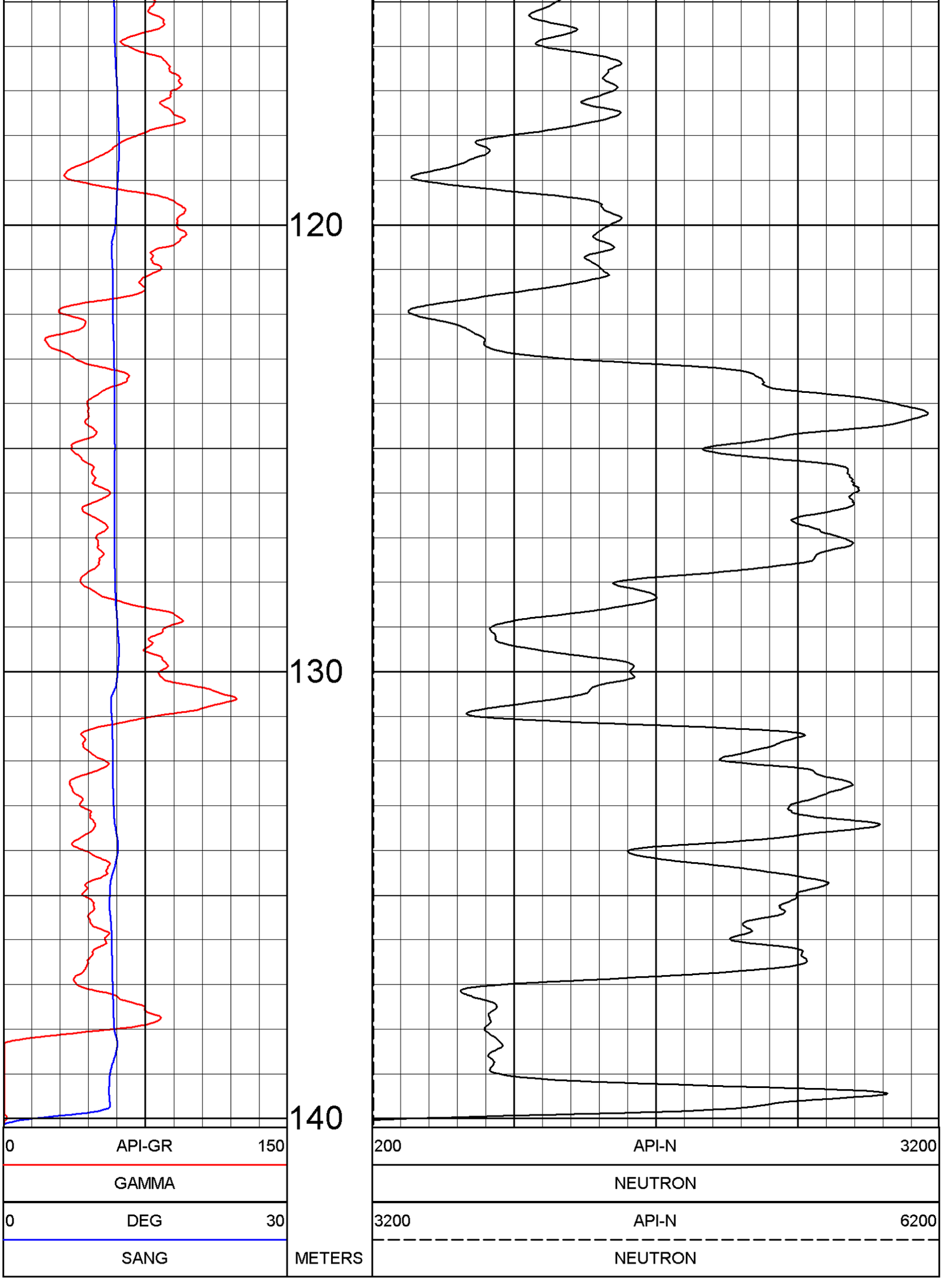
120
130
140
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API-GR
150
GAMMA
0
DEG
30
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METERS
200
API-N
3200
NEUTRON
3200
API-N
6200
NEUTRON

GAMMA NEUTRON TR 1:100 CM11-11 08/22/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/22/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-11 08/22/12 15:38
TOOL 9058A TM VERSION 3
SERIAL NUMBER 2631

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	May15,12	10:05:16	GAMMA	0.000	[API-GR]	3.000	[CPS]
	May15,12	10:05:16	GAMMA	545.000	[API-GR]	560.000	[CPS]
2	Jan19,12	10:47:24	TEMP	3.500	[DEG_F]	330443.000	[CPS]
	Jan19,12	10:47:24	TEMP	51.000	[DEG_F]	396853.000	[CPS]
3	May15,12	10:19:19	NEUTROI	Default	[CPS]	Default	[CPS]
	May15,12	10:19:19	NEUTRC	271.000	[API-N]	94.000	[CPS]
4	May16,11	09:08:18	POR(NEI	100.000	[PERCENT]	35.000	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-12

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-12
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
DEN-TR
NEU-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENCE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

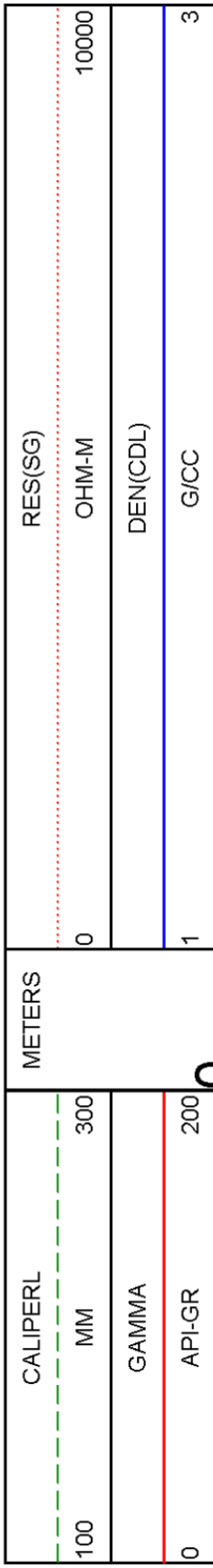
DATE	:08/16/12	RIG NUMBER	:GED
DEPTH DRILLER	:116.00	LOGGER TD	:116.00
BIT SIZE	:120.65	ARRIVAL TIME	:12:00
LOG TOP	:-0.76	DEPARTURE TIME	:17:00
LOG BOTTOM	:115.82	CIRC STOPPED	:NA
CASING LOGGER	:3.00		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:H20		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:Y.LEE		
RECORDED BY	:K.HUDGEON		
REMARKS 1	:		
REMARKS 2	:		

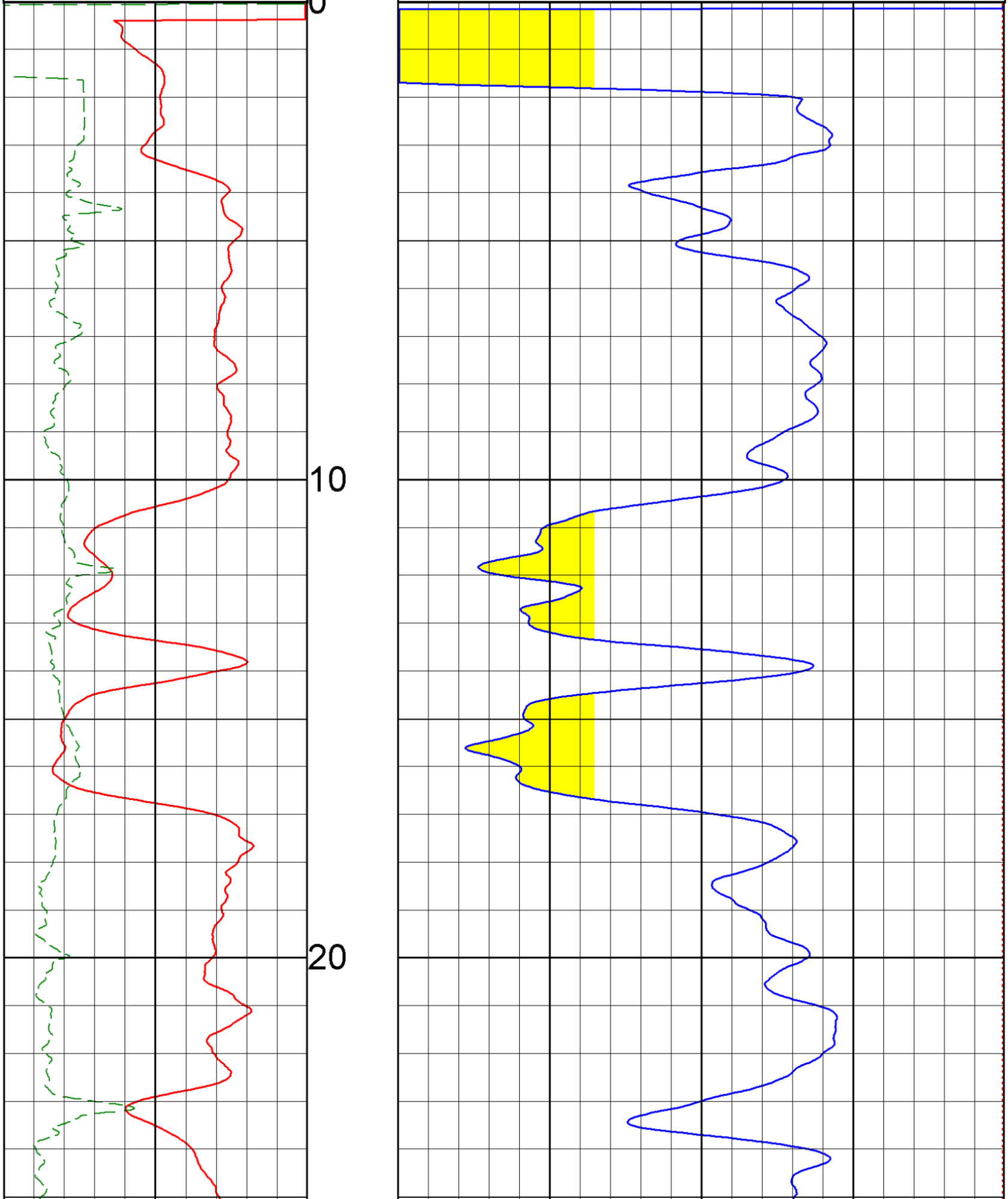
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

MAIN LOG 1:100 DENSITY CM11-12 08/16/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 15.02	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/13/2012		VERSION = 3.64KG	

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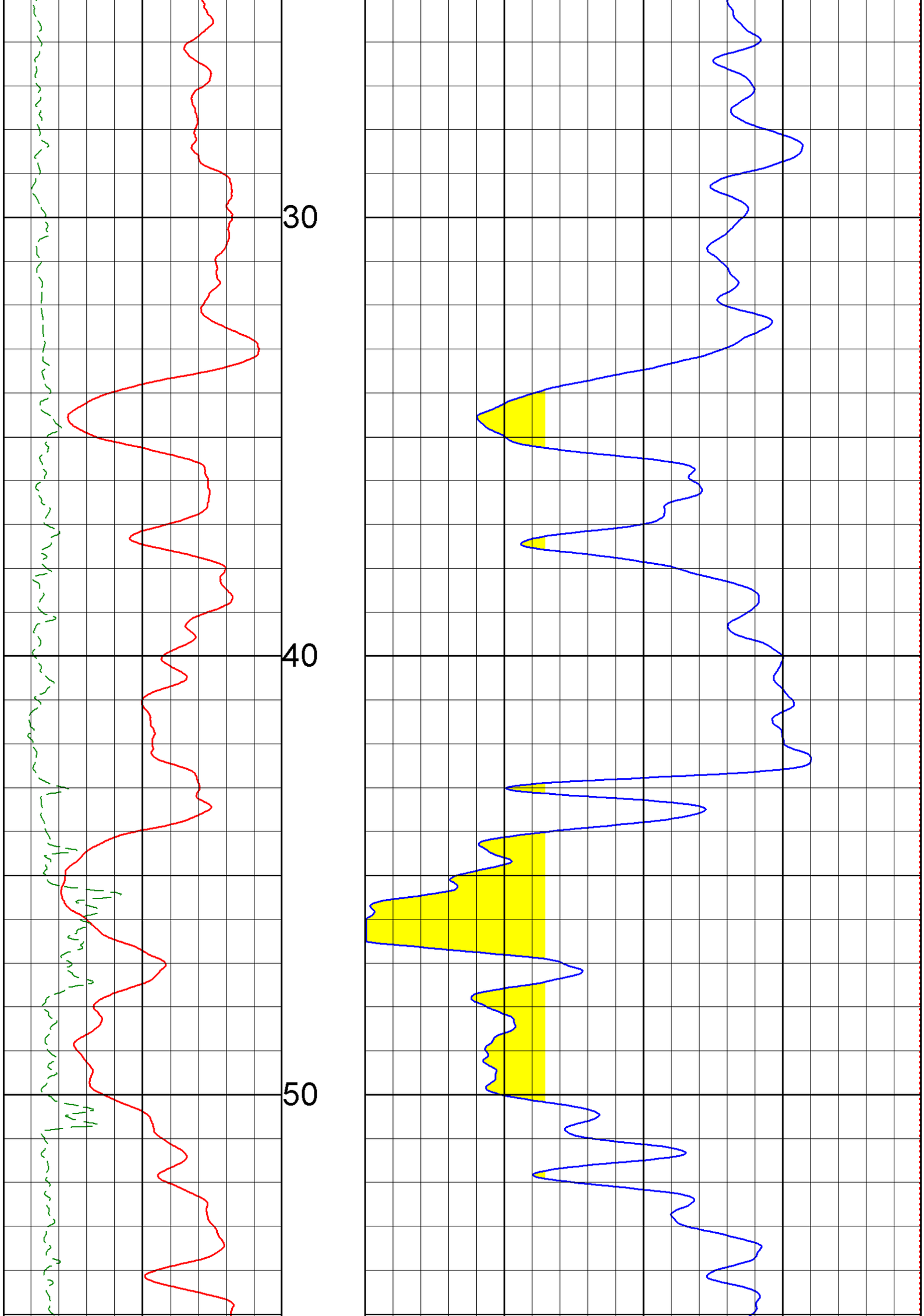
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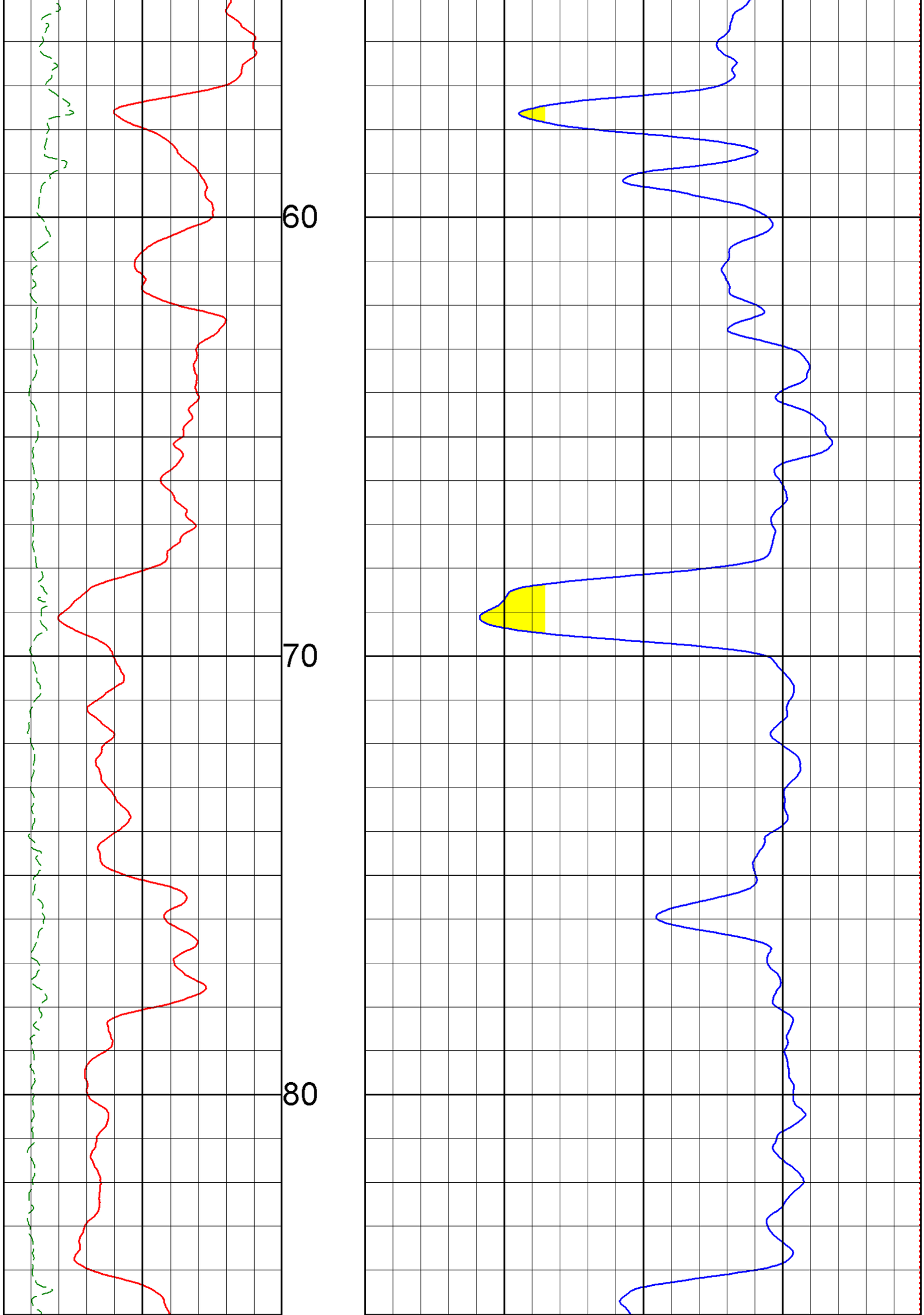
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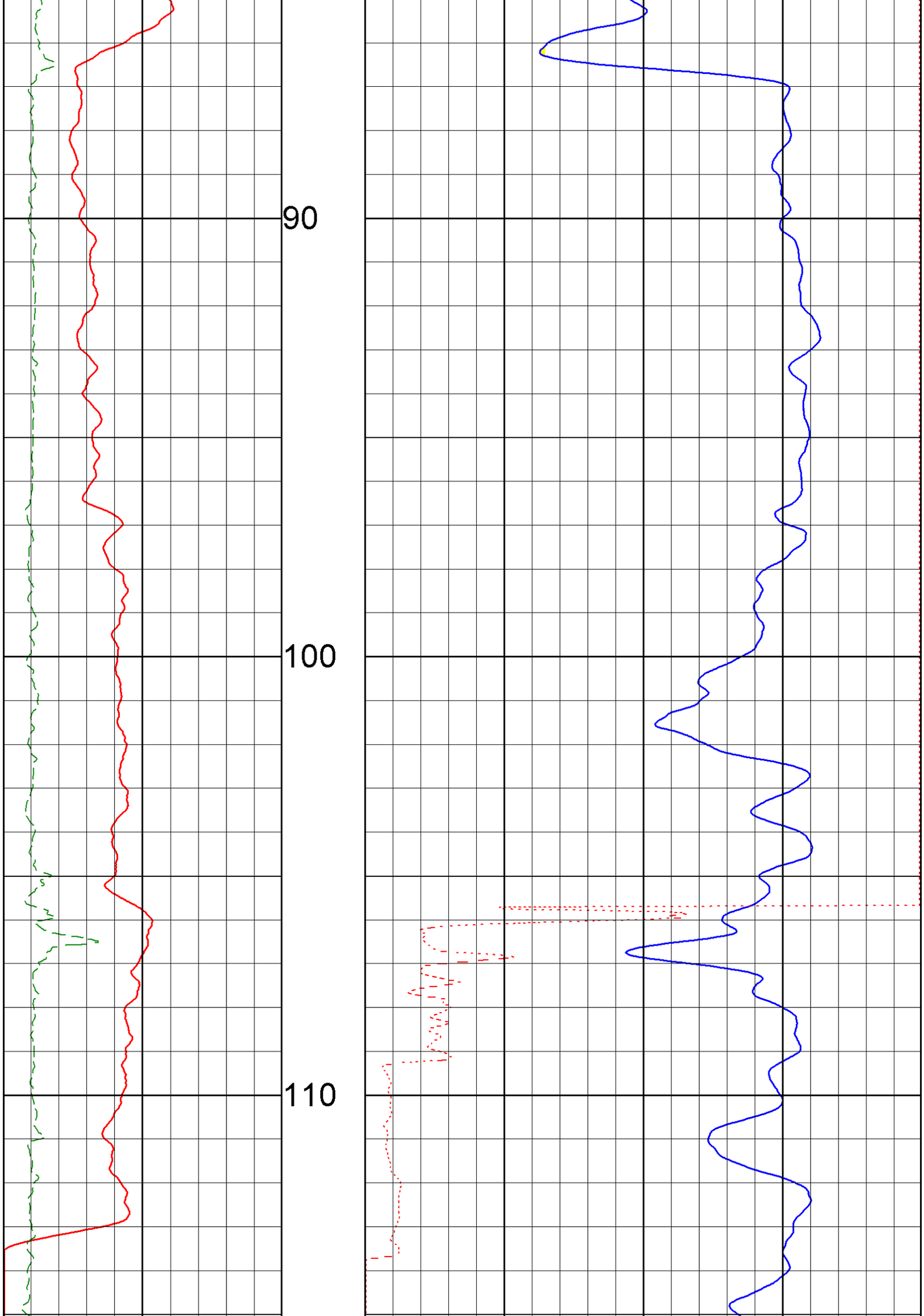
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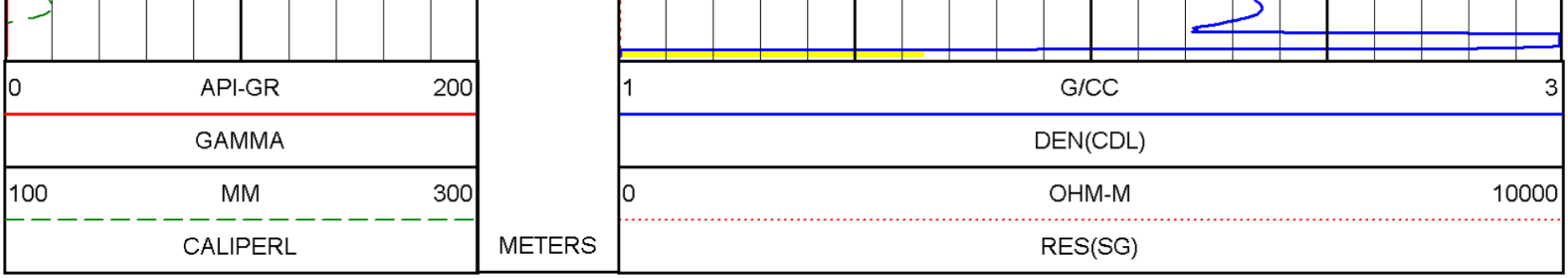


MAIN LOG 1:100 DENSITY CM11-12 08/16/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.02	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/13/2012		VERSION = 3.64KG

TOOL CALIBRATION CM11-12 08/16/12 14:56
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

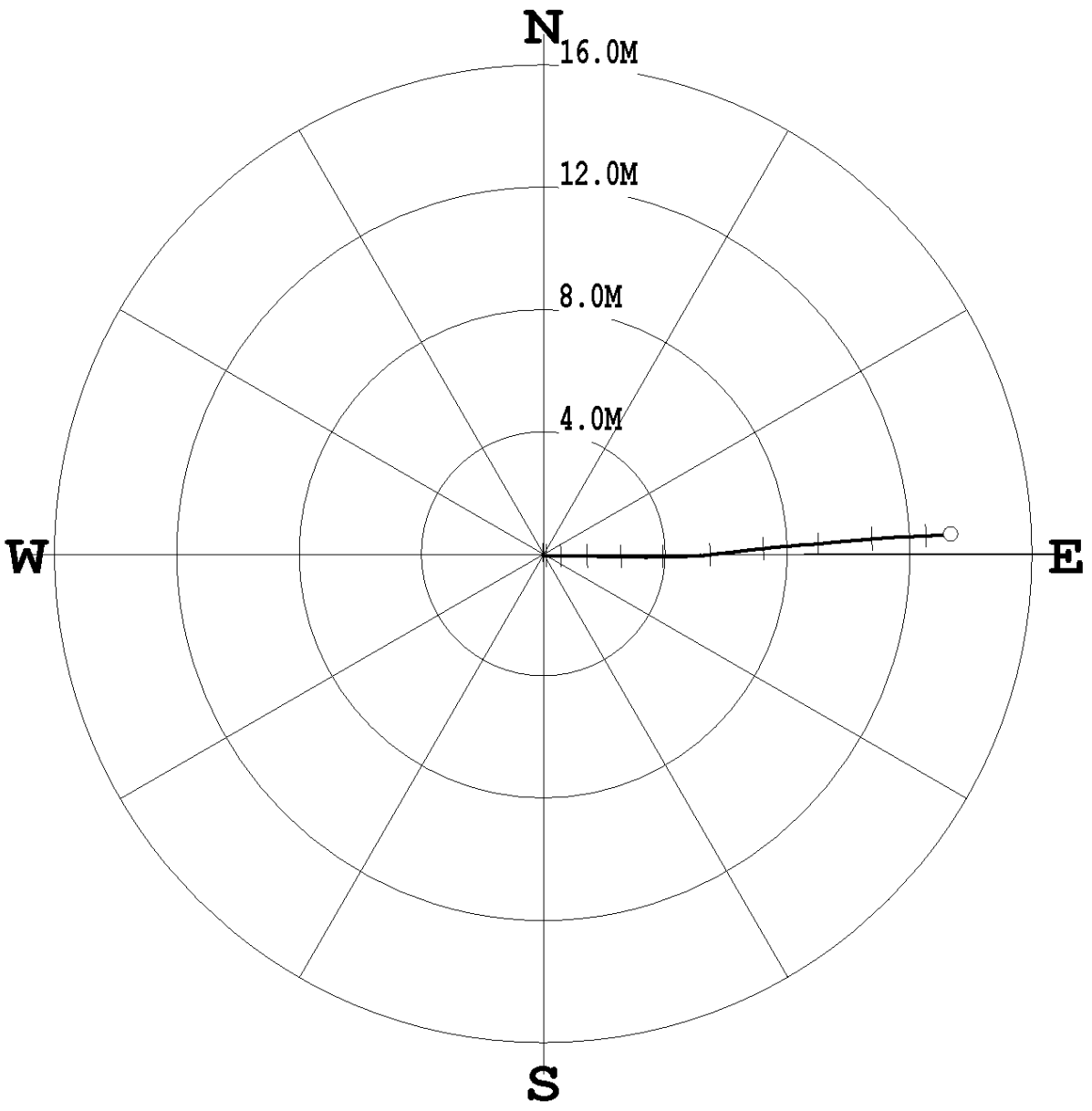
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul11,12	22:31:11	DEN(LS)	1.620	[G/CC]	13213.000	[CPS]
	Jul11,12	22:31:11	DEN(LS)	2.612	[G/CC]	1749.000	[CPS]
5	Jul11,12	22:30:53	DEN(SS)	1.590	[G/CC]	51131.000	[CPS]
	Jul11,12	22:30:53	DEN(SS)	2.580	[G/CC]	21428.000	[CPS]
6	Apr19,12	12:49:02	CALIPERL	100.000	[INCH]	168033.000	[CPS]
	Apr19,12	12:49:02	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-12
DATE OF LOG: 08/16/12
PROBE: 9055A 59

MAG DECL: 15.0

SCALE: 2 M/CM
TRUE DEPTH: 114.63 M
AZIMUTH: 87.2
DISTANCE: 13.3 M
+ = 10 M INCR
○ = BOTTOM OF HOLE

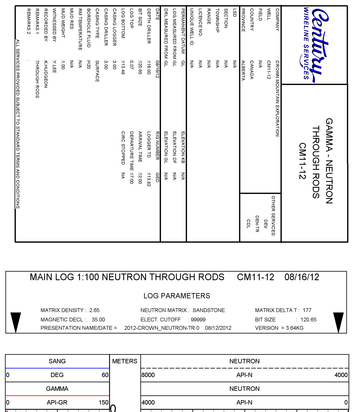


* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY GEO
DATA FROM : N/A
MAG. DECL. : 15.020
LOG: CM11-12_08-16-12_15-19_9055A_.02_7.00_115.66_DEVI.log

HOLE ID. : CM11-12
DATE OF LOG : 08/16/12
PROBE : 9055A , 59
DEPTH UNITS : METERS

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
7.00	7.00	0.00	-0.00	0.0	313.8	0.6	313.8
8.00	8.00	-0.00	-0.01	0.0	265.1	0.4	233.3
9.00	9.00	-0.01	-0.01	0.0	242.4	0.5	195.2
10.00	10.00	-0.02	-0.02	0.0	226.8	0.5	223.3
11.00	11.00	-0.02	-0.02	0.0	221.5	0.4	225.8
12.00	12.00	-0.03	-0.02	0.0	220.7	0.2	90.0
13.00	13.00	-0.03	-0.02	0.0	213.8	0.3	105.8
14.00	14.00	-0.03	-0.01	0.0	196.9	1.1	104.8
15.00	15.00	-0.04	-0.00	0.0	182.6	0.9	107.9
16.00	16.00	-0.04	0.01	0.0	167.6	0.4	134.5
17.00	17.00	-0.05	0.02	0.1	157.7	0.7	99.9
18.00	18.00	-0.05	0.04	0.1	143.5	1.2	94.2
19.00	19.00	-0.05	0.06	0.1	130.8	1.4	77.7
20.00	20.00	-0.05	0.09	0.1	120.9	1.4	95.2
21.00	21.00	-0.05	0.12	0.1	114.8	1.9	93.5
22.00	22.00	-0.06	0.15	0.2	110.6	2.3	95.9
23.00	23.00	-0.06	0.19	0.2	107.0	2.1	88.1
24.00	24.00	-0.06	0.23	0.2	104.0	2.5	75.8
25.00	25.00	-0.05	0.27	0.3	100.7	2.7	78.9
26.00	25.99	-0.05	0.32	0.3	98.3	3.3	101.5
27.00	26.99	-0.05	0.38	0.4	97.1	3.3	118.4
28.00	27.99	-0.05	0.44	0.4	96.5	3.8	96.3
29.00	28.99	-0.05	0.50	0.5	96.0	3.4	89.9
30.00	29.99	-0.05	0.56	0.6	95.3	3.9	89.8
31.00	30.98	-0.05	0.63	0.6	94.8	3.6	83.5
32.00	31.98	-0.05	0.70	0.7	93.9	4.4	93.0
33.00	32.98	-0.05	0.78	0.8	93.4	4.3	85.3
34.00	33.98	-0.04	0.86	0.9	93.0	4.6	89.9
35.00	34.97	-0.05	0.94	0.9	93.0	5.0	87.9
36.00	35.97	-0.05	1.03	1.0	92.8	5.0	85.5
37.00	36.96	-0.05	1.12	1.1	92.6	5.2	94.2
38.00	37.96	-0.05	1.22	1.2	92.6	5.6	98.8
39.00	38.95	-0.06	1.32	1.3	92.5	5.6	99.8
40.00	39.95	-0.06	1.42	1.4	92.5	5.8	95.8
41.00	40.94	-0.07	1.52	1.5	92.5	6.1	92.3
42.00	41.94	-0.07	1.62	1.6	92.4	6.2	92.0
43.00	42.93	-0.07	1.73	1.7	92.3	6.0	92.9
44.00	43.93	-0.07	1.83	1.8	92.2	5.8	90.9
45.00	44.92	-0.07	1.93	1.9	92.2	6.2	91.8
46.00	45.92	-0.08	2.04	2.0	92.2	5.8	82.4
47.00	46.91	-0.09	2.15	2.1	92.3	6.5	91.9
48.00	47.90	-0.08	2.26	2.3	92.0	7.2	88.9
49.00	48.90	-0.07	2.39	2.4	91.8	7.2	90.8
50.00	49.89	-0.07	2.51	2.5	91.7	7.2	89.7
51.00	50.88	-0.08	2.64	2.6	91.7	7.6	92.8
52.00	51.87	-0.09	2.77	2.8	91.9	7.7	87.2
53.00	52.86	-0.09	2.91	2.9	91.8	7.9	100.1
54.00	53.85	-0.10	3.04	3.0	91.8	7.9	87.7
55.00	54.84	-0.10	3.18	3.2	91.7	7.9	85.2
56.00	55.83	-0.10	3.32	3.3	91.7	7.8	98.9
57.00	56.82	-0.10	3.45	3.4	91.6	8.0	87.0
58.00	57.81	-0.10	3.58	3.6	91.5	7.8	87.6
59.00	58.80	-0.09	3.72	3.7	91.3	8.9	83.5
60.00	59.79	-0.07	3.87	3.9	91.1	8.2	93.2
61.00	60.78	-0.08	4.01	4.0	91.2	8.3	89.8
62.00	61.77	-0.09	4.15	4.1	91.2	8.5	89.0
63.00	62.76	-0.07	4.29	4.3	91.0	8.9	85.5
64.00	63.75	-0.08	4.44	4.4	91.0	9.1	87.1
65.00	64.74	-0.08	4.59	4.6	91.0	9.1	86.2
66.00	65.73	-0.07	4.75	4.8	90.8	9.0	84.8
67.00	66.72	-0.06	4.91	4.9	90.7	9.0	87.3
68.00	67.70	-0.05	5.06	5.1	90.6	9.7	75.0
69.00	68.69	-0.04	5.22	5.2	90.5	9.5	88.7
70.00	69.68	-0.03	5.39	5.4	90.3	9.6	86.6
71.00	70.66	0.00	5.55	5.6	90.0	9.8	89.9
72.00	71.65	0.02	5.72	5.7	89.8	9.4	87.6
73.00	72.63	0.03	5.89	5.9	89.7	9.9	92.1
74.00	73.62	0.04	6.06	6.1	89.6	9.0	95.3
75.00	74.60	0.07	6.23	6.2	89.3	10.0	81.6
76.00	75.59	0.09	6.41	6.4	89.2	10.2	83.0
77.00	76.57	0.11	6.58	6.6	89.0	10.1	82.9
78.00	77.56	0.14	6.76	6.8	88.8	10.2	81.3
79.00	78.54	0.15	6.93	6.9	88.7	10.1	83.9
80.00	79.52	0.17	7.10	7.1	88.6	10.0	80.9
81.00	80.51	0.19	7.27	7.3	88.5	10.0	84.0
82.00	81.49	0.21	7.45	7.4	88.4	9.2	83.7
83.00	82.48	0.23	7.62	7.6	88.3	10.1	88.2
84.00	83.46	0.25	7.79	7.8	88.2	10.0	77.2
85.00	84.45	0.25	7.96	8.0	88.2	9.9	78.0
86.00	85.43	0.27	8.15	8.1	88.1	10.5	83.2
87.00	86.41	0.29	8.33	8.3	88.0	10.4	85.5
88.00	87.40	0.31	8.51	8.5	87.9	10.4	87.4
89.00	88.38	0.31	8.69	8.7	87.9	10.3	86.8
90.00	89.37	0.33	8.86	8.9	87.9	10.2	86.3
91.00	90.35	0.34	9.04	9.0	87.8	10.3	86.4
92.00	91.33	0.36	9.22	9.2	87.8	10.6	78.7
93.00	92.32	0.38	9.39	9.4	87.7	10.5	80.1
94.00	93.30	0.39	9.57	9.6	87.6	9.9	83.8
95.00	94.29	0.41	9.74	9.7	87.6	9.6	87.4
96.00	95.27	0.43	9.91	9.9	87.5	10.1	86.5
97.00	96.26	0.44	10.08	10.1	87.5	9.7	86.2
98.00	97.24	0.45	10.25	10.3	87.5	10.2	82.5
99.00	98.23	0.47	10.43	10.4	87.4	10.2	83.5
100.00	99.21	0.48	10.60	10.6	87.4	9.5	85.8
101.00	100.20	0.50	10.77	10.8	87.4	10.0	84.3
102.00	101.18	0.52	10.94	11.0	87.3	10.0	82.8
103.00	102.17	0.53	11.12	11.1	87.3	10.0	85.2
104.00	103.15	0.54	11.29	11.3	87.3	10.2	78.6
105.00	104.13	0.55	11.47	11.5	87.3	10.4	87.3
106.00	105.12	0.56	11.65	11.7	87.2	10.4	84.9
107.00	106.10	0.56	11.82	11.8	87.3	9.9	89.6
108.00	107.09	0.57	12.00	12.0	87.3	9.9	86.9
109.00	108.07	0.58	12.17	12.2	87.3	9.6	89.7
110.00	109.06	0.59	12.34	12.4	87.3	9.7	86.6
111.00	110.04	0.59	12.51	12.5	87.3	9.8	95.6
112.00	111.03	0.60	12.68	12.7	87.3	10.0	86.4
113.00	112.01	0.62	12.86	12.9	87.3	10.2	83.3
114.00	113.00	0.63	13.03	13.0	87.2	9.9	85.8
115.00	113.98	0.64	13.20	13.2	87.2	10.1	91.8
115.66	114.59	0.65	13.31	13.3	87.2	10.2	85.5


Centuri
WIRELINE SERVICES
GAMMA - NEUTRON
THROUGH RODS
CM11-12
OTHER SERVICES
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PASS
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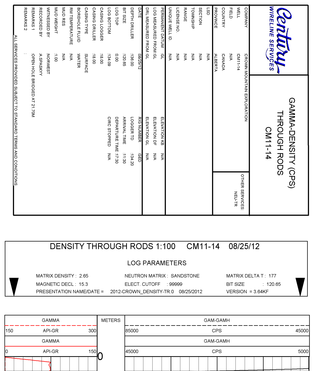
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THROUGH RODS
CM11-14
TOOL STRING
DENSITY
GAMMA
CALIPER
TELEMETRY
CARTRIDGE
SONDE
SENSOR
SPACER
CENTRALIZER
CABLE HEAD
TOOL
SERIAL NO.
O.D.
LENGTH
WEIGHT
MAX. REC. TEMP.
MAX. REC. PRESS.
MEASURE POINT OFFSET
RUN NO.
TIME LOGGER ON BOTTOM
MAX. LOGGED DEPTH
CASING-DRILLER
CASING-LOGGER
BOTTOM LOGGED INTERVAL
TOP LOGGED INTERVAL
TYPE FLUID IN HOLE
DENSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME SINCE CIRCULATION
TIME SINCE LOGGER ON BOTTOM
MAX. RECORDED BHT
EQUIPMENT LOCATION
RECORDED BY
WITNESSED BY
REMARKS
RUN 1
METRIC
N/A
N/A
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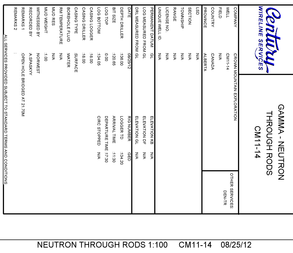

Century
WIRELINE SERVICES
GAMMA - NEUTRON
THROUGH RODS
CM11-14
CONTRACTOR
WELL
FIELD
COUNTY
STATE
LOCATION
SECTION
TOWNSHIP
RANGE
PERMANENT DATUM
ELEVATION
LOG MEASURED FROM
DRILLING MEASURED FROM
DEPTH DRILLER
DEPTH LOGGER
BOTTOM LOGGED INTERVAL
TOP LOGGED INTERVAL
CASING DRILLER
CASING LOGGER
BIT SIZE
TYPE FLUID
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE SAMPLE
RM @ MEAS TEMP
RMF @ MEAS TEMP
RMC @ MEAS TEMP
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME CIRC STOPPED
TIME LOGGER ON BOTTOM
MAX REC TEMP
EQUIP LOCATION
RECORDED BY
WITNESSED BY
RUN NUMBER
DEPTH DRILLER
SCHLUM DEPTH
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING DRILLER
CASING SCHLUM
BIT SIZE
TYPE FLUID
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS TEMP
RMF @ MEAS TEMP
RMC @ MEAS TEMP
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME CIRC STOPPED
TIME LOGGER ON BOTTOM
MAX REC TEMP
EQUIP LOCATION
RECORDED BY
WITNESSED BY
REMARKS
LOGGING DISTRICT
LOGGING ENGINEER
OPERATOR WITNESS
CONTRACTOR
LOCATION
PUMP
PUMP
PUMP

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-15

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-15
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:09/05/12	RIG NUMBER	:GED
DEPTH DRILLER	:141.00	LOGGER TD	:83.00
BIT SIZE	:120.65	ARRIVAL TIME	:00:30
LOG TOP	:0.00	DEPARTURE TIME	:05:00
LOG BOTTOM	:82.55	CIRC STOPPED	:N/A
CASING LOGGER	:12.10		
CASING DRILLER	:12.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:UNABLE TO REACH TD, TOOL STOPPED AT 83M		
REMARKS 2	:		

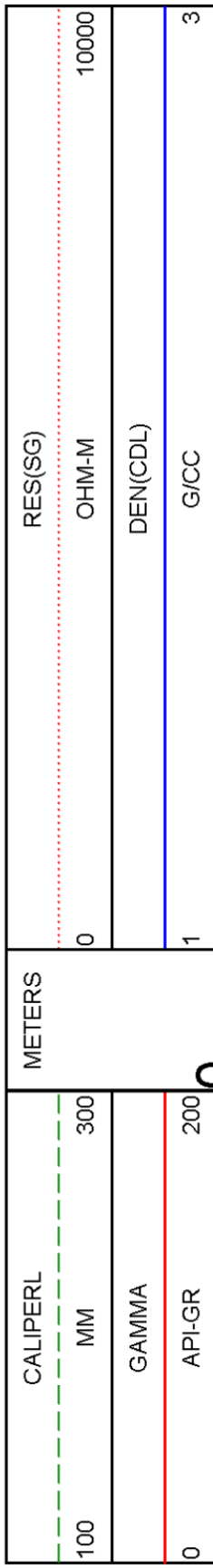
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

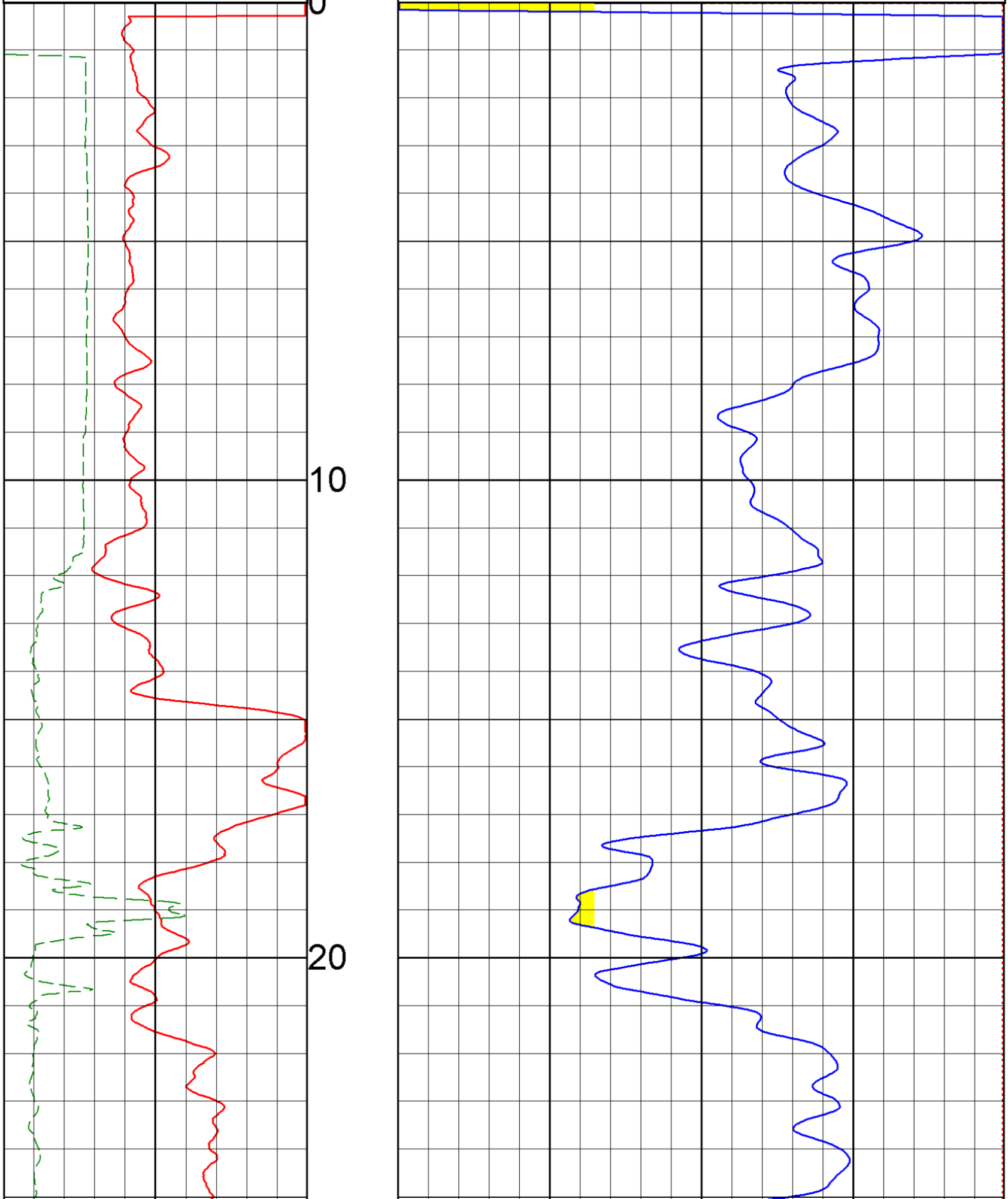
DENSITY 1:100 CM11-15 09/05/12

LOG PARAMETERS

MATRIX DENSITY :	2.65	NEUTRON MATRIX :	SANDSTONE
MAGNETIC DECL :	15.3	ELECT. CUTOFF	: 99999
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-RES.0 08/21/2012		

MATRIX DELTA T :	177
BIT SIZE	: 120.65
VERSION	= 3.64KF

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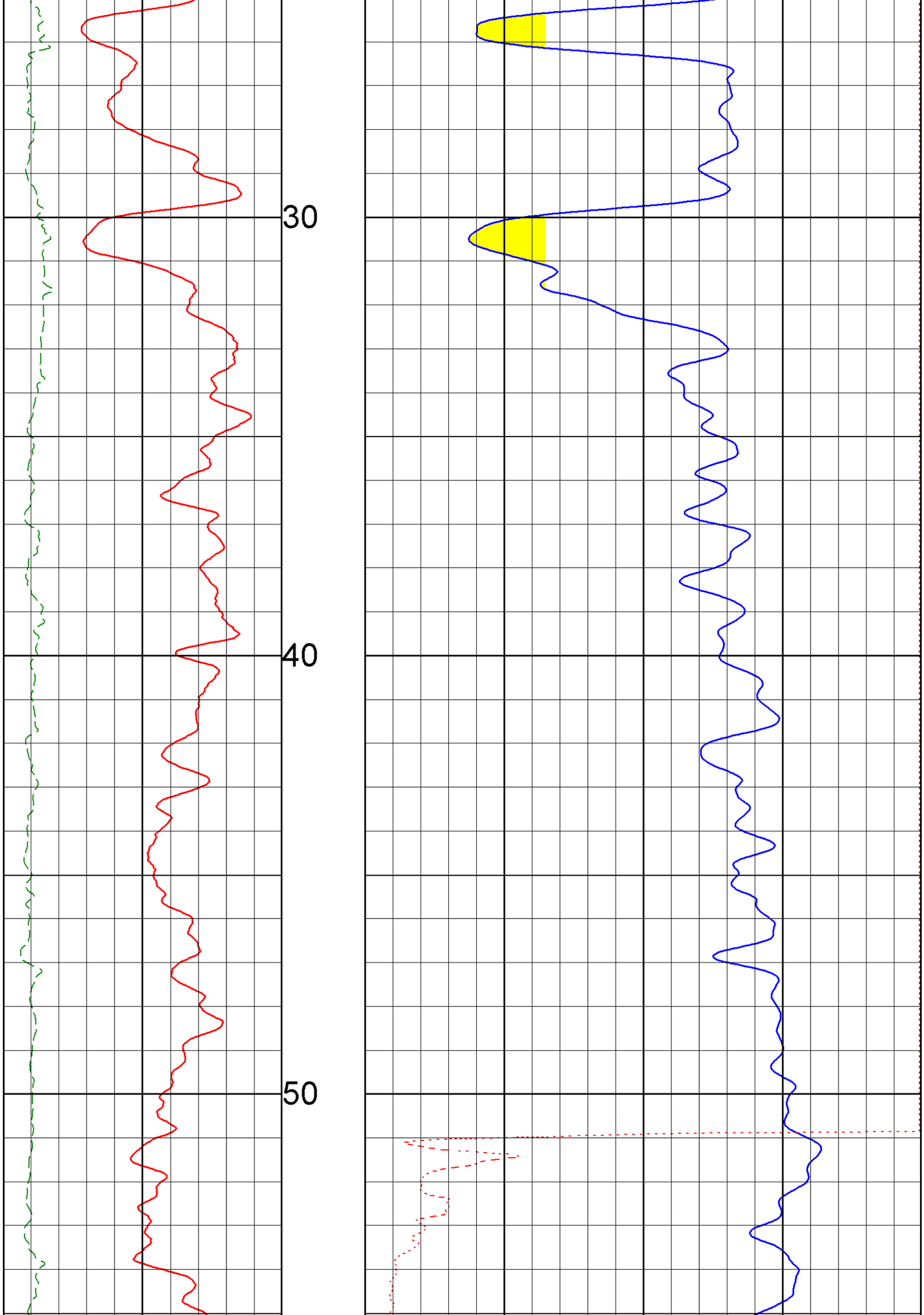
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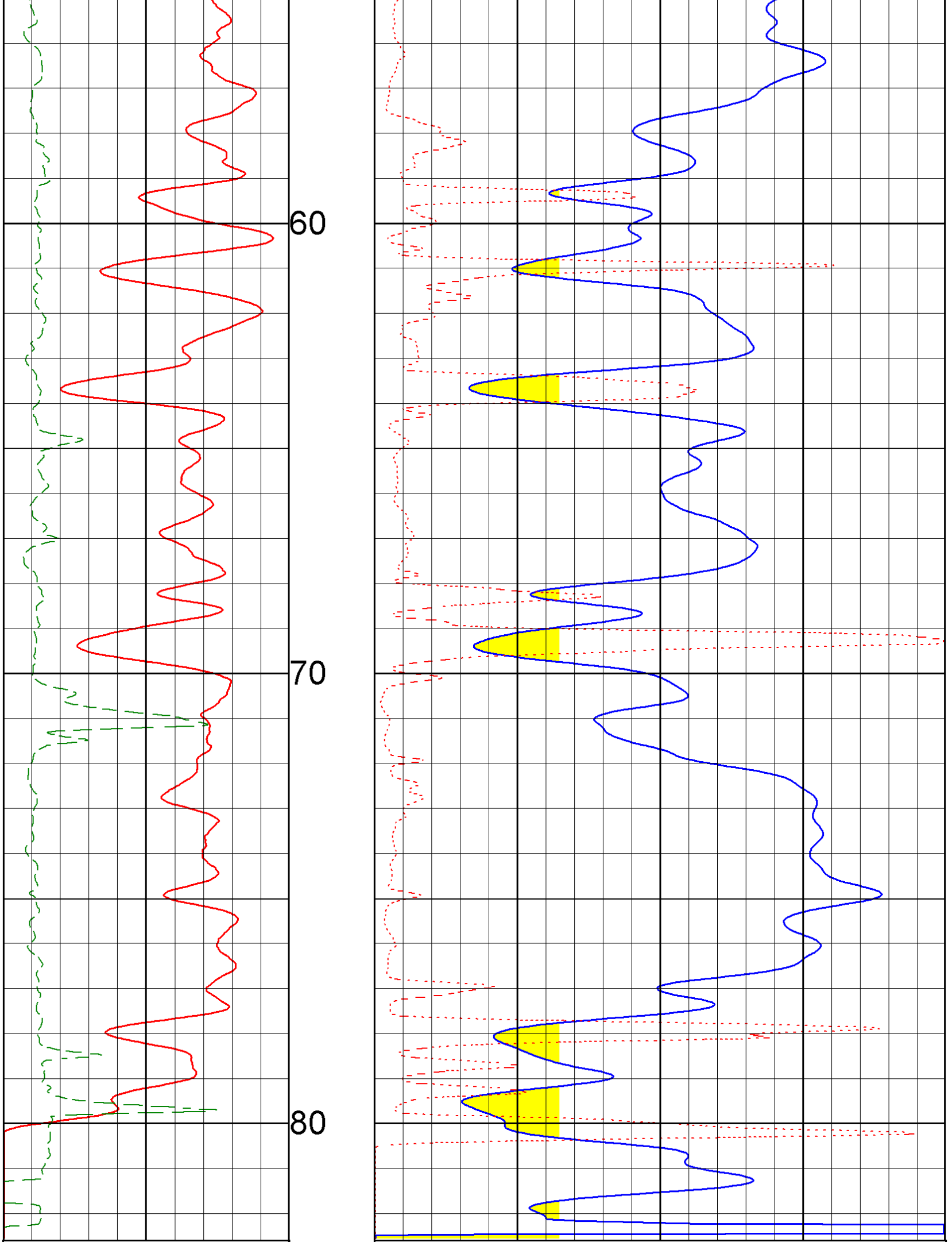

60
70
80

0	API-GR	200		1	G/CC	3
	GAMMA				DEN(CDL)	
100	MM	300		0	OHM-M	10000
	CALIPERL		METERS		RES(SG)	

DENSITY 1:100 CM11-15 09/05/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177

MAGNETIC DECL : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65

PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012 VERSION = 3.64KF

TOOL CALIBRATION CM11-15 09/05/12 04:19
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

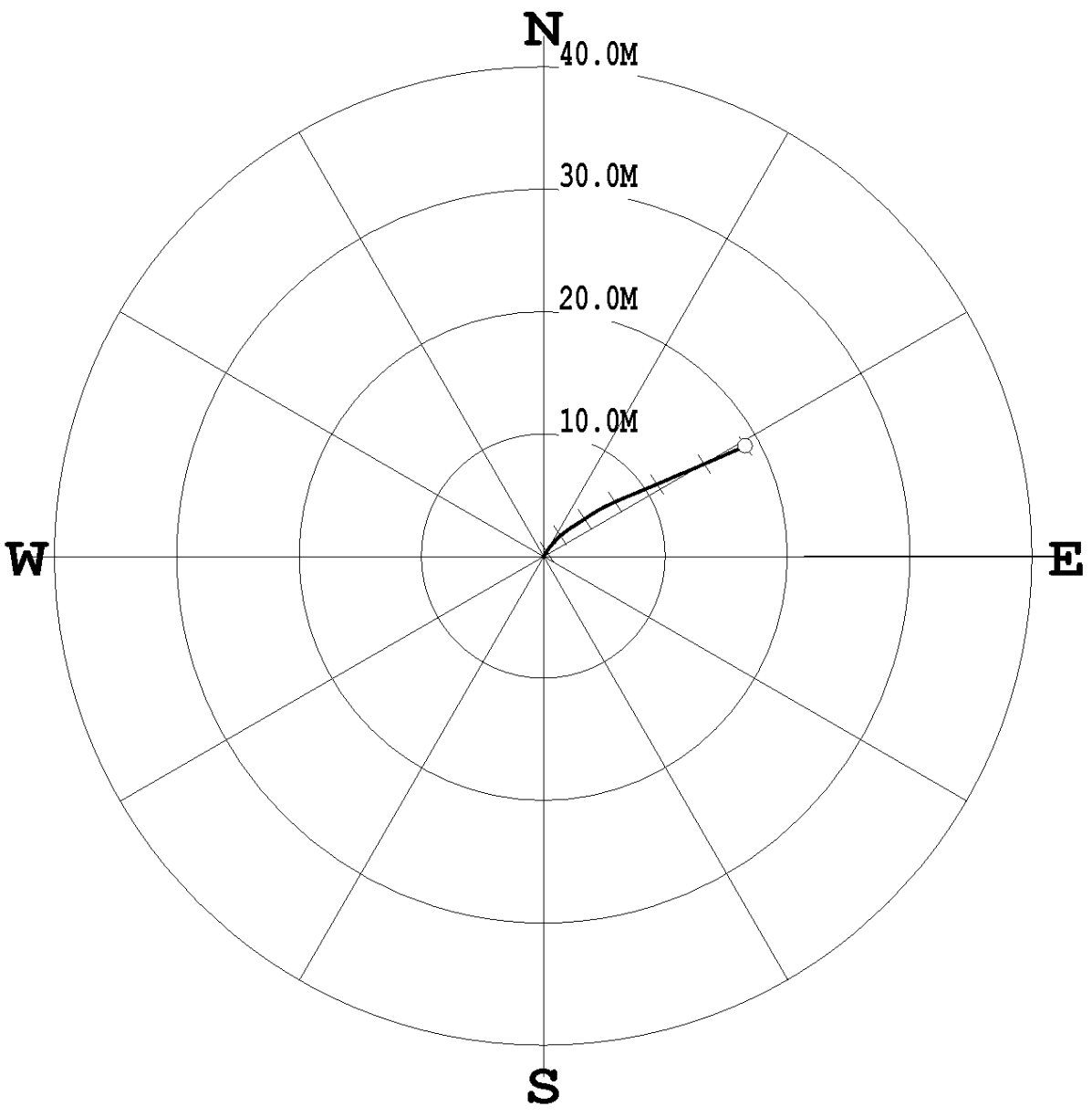
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-15
DATE OF LOG: 09/05/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 5 M/CM
TRUE DEPTH: 138.75 M
AZIMUTH: 61.4
DISTANCE: 18.8 M
+ = 20 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
HOLE ID. : CM11-15
FIELD OFFICE : CENTURY GEO
DATE OF LOG : 09/05/12
DATA FROM : N/A
PROBE : 9055A , 59
MAG. DECL. : 15.300
DEPTH UNITS : METERS
LOG: CM11-15_09-05-12_03-43_9055A_.02_15.00_140.33_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
15.02	15.02	0.00	0.00	0.0	30.2	5.5	30.2
16.00	16.00	0.08	0.05	0.1	30.0	5.3	32.7
17.00	16.99	0.16	0.10	0.2	31.1	5.3	35.6
18.00	17.99	0.23	0.15	0.3	32.4	5.1	33.0
19.00	18.98	0.31	0.19	0.4	32.3	5.0	29.5
20.00	19.98	0.38	0.24	0.4	32.5	4.9	30.1
21.00	20.98	0.45	0.28	0.5	32.3	4.8	33.6
22.00	21.97	0.52	0.33	0.6	32.6	5.3	36.0
23.00	22.97	0.59	0.38	0.7	32.5	4.6	32.5
24.00	23.97	0.66	0.42	0.8	32.7	4.8	33.6
25.00	24.96	0.73	0.47	0.9	33.1	4.6	40.2
26.00	25.96	0.79	0.52	0.9	33.3	4.6	43.8
27.00	26.96	0.85	0.57	1.0	33.7	4.6	37.0
28.00	27.95	0.91	0.62	1.1	34.1	4.4	38.7
29.00	28.95	0.97	0.67	1.2	34.6	4.8	45.2
30.00	29.95	1.03	0.72	1.3	34.9	4.5	41.0
31.00	30.94	1.09	0.78	1.3	35.5	4.6	47.3
32.00	31.94	1.15	0.83	1.4	36.0	5.0	43.6
33.00	32.94	1.21	0.89	1.5	36.4	5.0	42.2
34.00	33.93	1.28	0.95	1.6	36.6	5.1	40.8
35.00	34.93	1.35	1.02	1.7	36.9	6.2	43.2
36.00	35.92	1.43	1.08	1.8	37.3	5.4	34.6
37.00	36.92	1.50	1.15	1.9	37.5	5.7	44.7
38.00	37.91	1.57	1.22	2.0	37.9	5.1	47.2
39.00	38.91	1.63	1.29	2.1	38.4	5.4	47.3
40.00	39.90	1.69	1.37	2.2	38.9	5.8	47.6
41.00	40.90	1.76	1.44	2.3	39.4	5.9	49.8
42.00	41.89	1.83	1.52	2.4	39.8	5.6	54.6
43.00	42.89	1.89	1.60	2.5	40.3	5.8	59.7
44.00	43.88	1.95	1.69	2.6	40.9	6.0	53.5
45.00	44.88	2.01	1.77	2.7	41.4	6.2	52.4
46.00	45.87	2.07	1.86	2.8	41.8	6.1	55.3
47.00	46.86	2.14	1.94	2.9	42.2	6.3	54.0
48.00	47.86	2.20	2.03	3.0	42.7	6.4	51.7
49.00	48.85	2.27	2.13	3.1	43.2	6.5	54.2
50.00	49.85	2.34	2.22	3.2	43.5	6.6	47.8
51.00	50.84	2.40	2.32	3.3	44.0	6.9	63.0
52.00	51.83	2.46	2.42	3.5	44.5	6.9	54.7
53.00	52.82	2.53	2.52	3.6	44.9	6.8	46.1
54.00	53.82	2.59	2.63	3.7	45.4	7.1	50.3
55.00	54.81	2.66	2.74	3.8	45.8	7.5	56.2
56.00	55.80	2.74	2.85	4.0	46.2	7.8	57.9
57.00	56.79	2.81	2.96	4.1	46.5	7.9	57.4
58.00	57.78	2.89	3.08	4.2	46.8	7.9	52.8
59.00	58.77	2.96	3.19	4.4	47.1	8.2	54.2
60.00	59.76	3.04	3.31	4.5	47.4	8.1	58.8
61.00	60.75	3.12	3.43	4.6	47.7	8.3	60.3
62.00	61.74	3.19	3.55	4.8	48.0	8.3	58.4
63.00	62.73	3.27	3.67	4.9	48.2	8.2	56.3
64.00	63.72	3.35	3.79	5.1	48.5	8.1	56.6
65.00	64.71	3.42	3.91	5.2	48.8	7.8	62.1
66.00	65.70	3.50	4.03	5.3	49.0	7.9	55.4
67.00	66.69	3.57	4.14	5.5	49.2	8.1	53.2
68.00	67.68	3.65	4.26	5.6	49.4	8.0	60.6
69.00	68.67	3.72	4.37	5.7	49.6	7.6	60.4
70.00	69.66	3.79	4.49	5.9	49.8	7.8	60.0
71.00	70.65	3.86	4.60	6.0	50.0	8.0	43.9
72.00	71.64	3.92	4.72	6.1	50.3	8.5	62.0
73.00	72.63	3.99	4.85	6.3	50.6	8.0	62.5
74.00	73.62	4.05	4.98	6.4	50.9	8.1	62.3
75.00	74.61	4.11	5.10	6.6	51.1	8.4	59.9
76.00	75.60	4.17	5.23	6.7	51.4	8.3	73.4
77.00	76.59	4.23	5.36	6.8	51.7	8.2	62.8
78.00	77.58	4.29	5.50	7.0	52.0	8.7	64.0
79.00	78.57	4.36	5.63	7.1	52.3	9.2	55.1
80.00	79.56	4.42	5.77	7.3	52.5	8.7	64.3
81.00	80.54	4.49	5.91	7.4	52.8	9.0	65.6
82.00	81.53	4.55	6.05	7.6	53.0	8.6	68.8
83.00	82.52	4.61	6.19	7.7	53.3	9.0	66.2
84.00	83.51	4.68	6.34	7.9	53.5	9.3	67.3
85.00	84.49	4.74	6.49	8.0	53.9	9.7	65.8
86.00	85.48	4.81	6.64	8.2	54.1	10.0	63.6
87.00	86.47	4.87	6.80	8.4	54.4	10.4	67.1
88.00	87.45	4.94	6.96	8.5	54.7	10.0	72.0
89.00	88.43	5.00	7.13	8.7	54.9	10.5	66.8
90.00	89.42	5.07	7.30	8.9	55.2	10.9	67.0
91.00	90.40	5.14	7.47	9.1	55.5	10.9	69.6
92.00	91.38	5.22	7.65	9.3	55.7	11.1	66.4
93.00	92.36	5.30	7.82	9.4	55.9	10.9	68.3
94.00	93.34	5.37	8.00	9.6	56.1	10.4	68.8
95.00	94.32	5.45	8.18	9.8	56.3	11.3	64.7
96.00	95.30	5.53	8.36	10.0	56.5	11.4	67.0
97.00	96.28	5.60	8.54	10.2	56.8	11.5	67.3
98.00	97.26	5.67	8.73	10.4	57.0	11.9	67.1
99.00	98.24	5.75	8.92	10.6	57.2	11.8	66.3
100.00	99.22	5.83	9.11	10.8	57.4	11.8	65.6
101.00	100.20	5.91	9.30	11.0	57.6	11.9	67.0
102.00	101.18	5.99	9.49	11.2	57.7	11.9	65.7
103.00	102.16	6.07	9.68	11.4	57.9	12.0	66.5
104.00	103.13	6.15	9.87	11.6	58.0	11.8	68.4
105.00	104.11	6.23	10.06	11.8	58.2	11.8	66.1
106.00	105.09	6.32	10.24	12.0	58.3	10.9	71.8
107.00	106.07	6.40	10.43	12.2	58.5	11.6	66.9
108.00	107.05	6.49	10.62	12.4	58.6	11.9	66.3
109.00	108.03	6.57	10.81	12.6	58.7	11.9	62.2
110.00	109.01	6.65	11.00	12.9	58.8	11.8	68.4
111.00	109.98	6.73	11.19	13.1	59.0	11.7	68.2
112.00	110.96	6.80	11.38	13.3	59.1	11.9	68.5
113.00	111.94	6.88	11.57	13.5	59.3	12.2	67.6
114.00	112.92	6.96	11.77	13.7	59.4	12.1	68.5
115.00	113.90	7.05	11.96	13.9	59.5	11.9	66.8
116.00	114.88	7.12	12.15	14.1	59.6	11.7	65.3
117.00	115.85	7.20	12.33	14.3	59.7	11.4	55.4
118.00	116.83	7.29	12.52	14.5	59.8	11.9	65.3
119.00	117.81	7.37	12.71	14.7	59.9	11.7	65.8
120.00	118.79	7.45	12.89	14.9	60.0	11.8	65.8
121.00	119.77	7.53	13.08	15.1	60.1	11.5	68.1
122.00	120.75	7.61	13.26	15.3	60.1	11.8	66.0
123.00	121.73	7.69	13.45	15.5	60.2	11.6	67.8
124.00	122.71	7.77	13.63	15.7	60.3	11.4	66.7
125.00	123.69	7.85	13.81	15.9	60.4	11.4	65.7
126.00	124.67	7.93	13.99	16.1	60.5	11.5	67.4
127.00	125.65	8.01	14.17	16.3	60.5	11.3	65.4
128.00	126.63	8.08	14.35	16.5	60.6	11.4	71.7
129.00	127.61	8.15	14.53	16.7	60.7	12.7	61.0
130.00	128.59	8.23	14.71	16.9	60.8	11.4	61.8
131.00	129.58	8.31	14.88	17.0	60.8	11.1	65.6
132.00	130.56	8.38	15.05	17.2	60.9	11.0	66.9
133.00	131.54	8.46	15.23	17.4	60.9	10.8	67.5
134.00	132.52	8.54	15.40	17.6	61.0	11.0	66.8
135.00	133.50	8.62	15.58	17.8	61.1	10.8	66.1
136.00	134.48	8.69	15.75	18.0	61.1	10.7	67.2
137.00	135.47	8.76	15.92	18.2	61.2	11.0	68.5
138.00	136.45	8.83	16.10	18.4	61.2	10.8	67.6
139.00	137.43	8.91	16.27	18.5	61.3	11.0	65.8
140.00	138.41	8.98	16.45	18.7	61.4	10.9	64.7
140.34	138.71	9.00	16.50	18.8	61.4	11.0	66.4

Century WIRELINE SERVICES

GAMMA - NEUTRON
THROUGH RODS
CM11-15

COMPANY: SCHLUMBERGER
WELL: CM11-15
FIELD: CM11-15
COUNTY: CANADA
STATE: Alberta
LOCATION: CM11-15
PERMANENT DATUM: GL
ELEV.: 0
LOG MEASURED FROM: KB
DRILLING MEASURED FROM: KB
ELEVATIONS: KB: 0, DF: 0, GL: 0

RUN NO.	ONE		
DATE	09/05/12		
DEPTH-DRILLER	0		
DEPTH-LOGGER	0		
BTM LOG INTERVAL	0		
TOP LOG INTERVAL	0		
CASING-DRILLER	0 @ 0		
CASING-LOGGER	0 @ 0		
BIT SIZE	0		
TYPE FLUID IN HOLE	N/A		
DENSITY / VISCOSITY	N/A		
PH / FLUID LOSS	N/A		
SOURCE OF SAMPLE	N/A		
RM @ MEAS. TEMP.	N/A		
RMF @ MEAS. TEMP.	N/A		
RMC @ MEAS. TEMP.	N/A		
SOURCE RMF / RMC	N/A		
RM @ BHT	N/A		
TIME SINCE CIRC.	N/A		
MAX REC. TEMP.	N/A		
EQUIP. LOCATION	N/A		
RECORDED BY	N/A		
WITNESSED BY	N/A		

SCHLUMBERGER DEPTH CONTROL EQUIPMENT USED

TOOL TYPE	SERIAL NUMBER	EQUIPMENT NUMBER
GAMMA RAY	9055A	N/A
CCL	9055A	N/A
CABLE	9055A	N/A

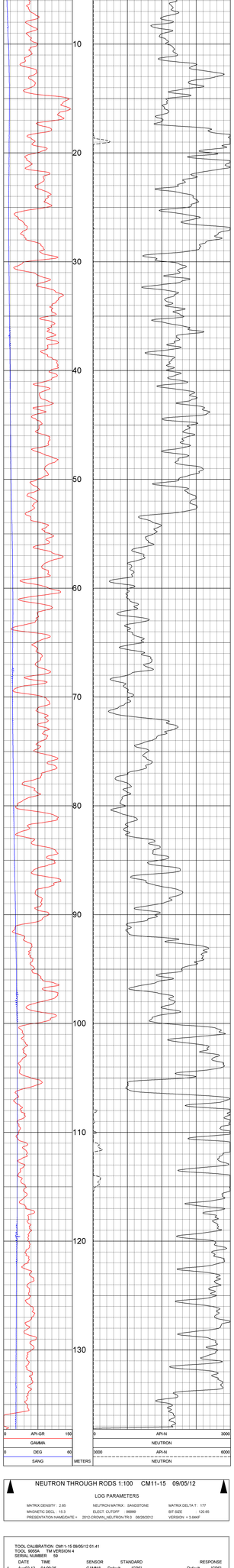
REMARKS: THE DEPTH IS REFERENCED TO KB. ELEVATIONS: KB: 0 m, DF: 0 m, GL: 0 m

NEUTRON THROUGH RODS 1:100 CM11-15 09/05/12

LOG PARAMETERS

MATRIX DENSITY 2.65	NEUTRON MATRIX SANDSTONE	MATRIX DELTA T 177	
MAGNETIC DECL 15.3	ELECT. CUTOFF 99999	BIT SIZE 120.65	
PRESENTATION NAME/DATE + 2012-CROWN_NEUTRON.TR.0 06/29/2012		VERSION + 3.64A7	

SANG
GAMMA
API-GR
DEG
METERS
NEUTRON
API-N



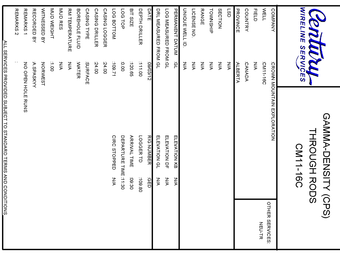
NEUTRON THROUGH RODS 1:100 CM11-15 09/05/12

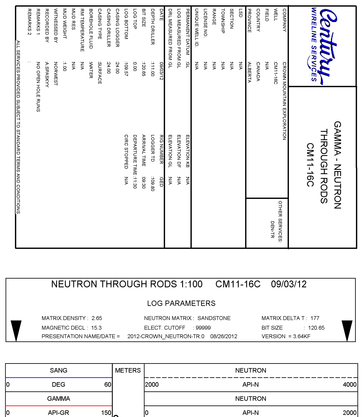
LOG PARAMETERS

MATRIX DENSITY 2.65	NEUTRON MATRIX SANDSTONE	MATRIX DELTA T 177	
MAGNETIC DECL 15.3	ELECT. CUTOFF 99999	BIT SIZE 120.65	
PRESENTATION NAME/DATE + 2012-CROWN_NEUTRON.TR.0 06/29/2012		VERSION + 3.64A7	

TOOL CALIBRATION CM11-15 09/05/12 01:41
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02.12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
2	Oct15.07	08:00:58	GAMMA	452.000	[API GR]	452.000	[CPS]
	Oct15.07	08:00:58	PORSOT	Default	[CPS]		
3	May12.08	08:20:59	RES	0.000	[OHM]	9678.000	[CPS]
	May12.08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12.08	08:20:52	SP	0.000	[MV]	0.000	[CPS]
	May12.08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04.09	10:40:49	NEUTPOR	0.000	[API-N]	1.000	[CPS]
	Dec04.09	10:40:49	NEUTREC	271.000	[API-N]	95.000	[CPS]
6	Oct15.07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15.07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

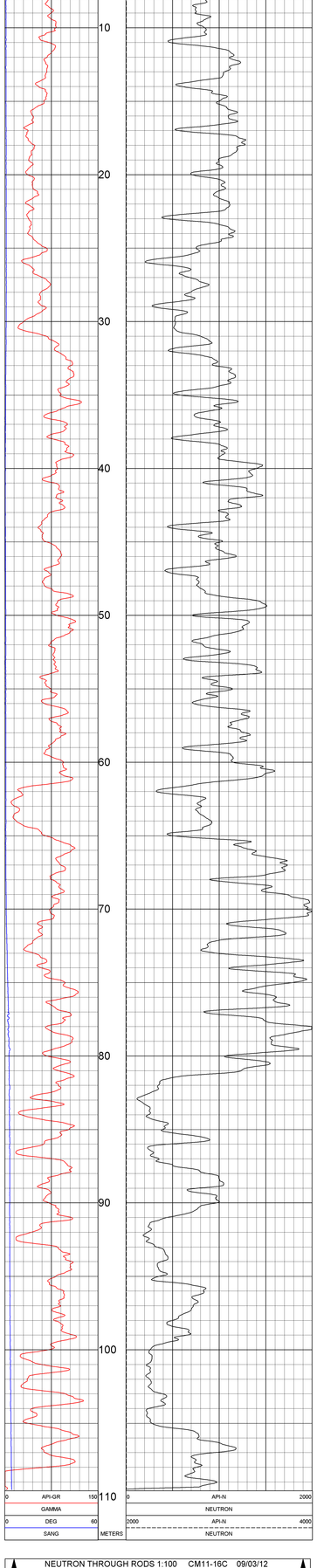

Century
WIRELINE SERVICES
GAMMA-DENSITY (CPS)
THROUGH RODS
CM11-16C
COMPANY
CROWN EXPLORATION EXPLORATION
WELL
CM11-16C
FIELD
COUNTRY
CANADA
PROVINCE
ALBERTA
SECTION
N/A
RANGE
N/A
TOWNSHIP
N/A
PERMANENT DATUM
SEA LEVEL
ELEVATION
N/A
LOG MEASURED FROM
N/A
DRILLING MEASURED FROM
N/A
OTHER SERVICES
HEIGHT
ELEVATIONS
K.B.
D.F.
G.L.
DATE
09/03/12
RUN NO.
ONE
DEPTH-DRILLER
DEPTH-LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING-DRILLER
CASING-LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME CIRC. STOPPED
TIME LOGGER ON BOTTOM
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
N/A
N/A
N/A



NEUTRON THROUGH RODS 1:100 CM11-16C 09/03/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE 120.65
PRESENTATION NAME/DATE =	2012-CROWN_NEUTRON-TR 0 08/26/2012	VERSION = 3.64KF



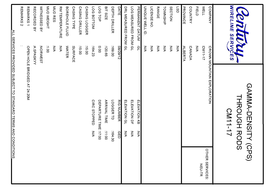
NEUTRON THROUGH RODS 1:100 CM11-16C 09/03/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE 120.65
PRESENTATION NAME/DATE =	2012-CROWN_NEUTRON-TR 0 08/26/2012	VERSION = 3.64KF

TOOL CALIBRATION CM11-16C 09/03/12 11:02
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	POROSIT	Default	[CPS]		
3	May12,08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12,08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04,09	10:40:49	NEUTRON	0.000	[API-N]	1.000	[CPS]
	Dec04,09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]



DENSITY THROUGH RODS 1:100 CM11-17 08/29/12

LOG PARAMETERS

MATRIX DENSITY: 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T: 177
MAGNETIC DECL.: 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 20=2-CROWN_DENSITY-TR-D 08/29/2012 VERSION = 3.64AF

GAMMA METERS GAM-GAM1

150 API-GR 300 100000 CPS 50000

GAMMA GAM-GAM1

0 API-GR 150 50000 CPS 50000

0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160

0 API-GR 150 50000 CPS 50000

GAMMA GAM-GAM1

150 API-GR 300 100000 CPS 50000

GAMMA METERS GAM-GAM1

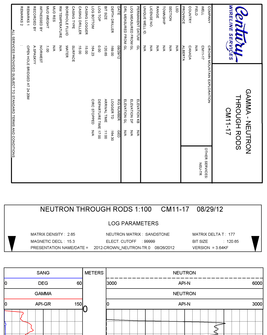
DENSITY THROUGH RODS 1:100 CM11-17 08/29/12

LOG PARAMETERS

MATRIX DENSITY: 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T: 177
MAGNETIC DECL.: 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 20=2-CROWN_DENSITY-TR-D 08/29/2012 VERSION = 3.64AF

TOOL CALIBRATION: CM11-17 08/29/12 13:34
TOOL: 9088A TM VERSION 1
CAL. NUMBER: 1443

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug28,12	07:52:32	GAMMA	Default	[CPS]	Default	[CPS]
	Aug28,12	07:52:32	GAMMA	540.000	[API-GR]	184.040	[CPS]


Century
GEOPHYSICAL CORPORATION
GAMMA - NEUTRON
THROUGH RODS
CM11-17
DESCRIPTION
MEASURED FROM
ELEVATION
ABOVE PERM. DATUM
LOG MEASURED FROM
DRILLING MEASURED FROM
DATE
RUN NO.
TYPE LOG
DEPTH-DRILLER
DEPTH-LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING-DRILLER
CASING-LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENS. VISC.
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF RMC
RM @ BHT
TIME CIRC. STOPPED
TIME LOGGER ON BOTTOM
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
PERMANENT DATUM
ELEV.
ELEV.
ELEV.

Centaur WIRELINE SERVICES

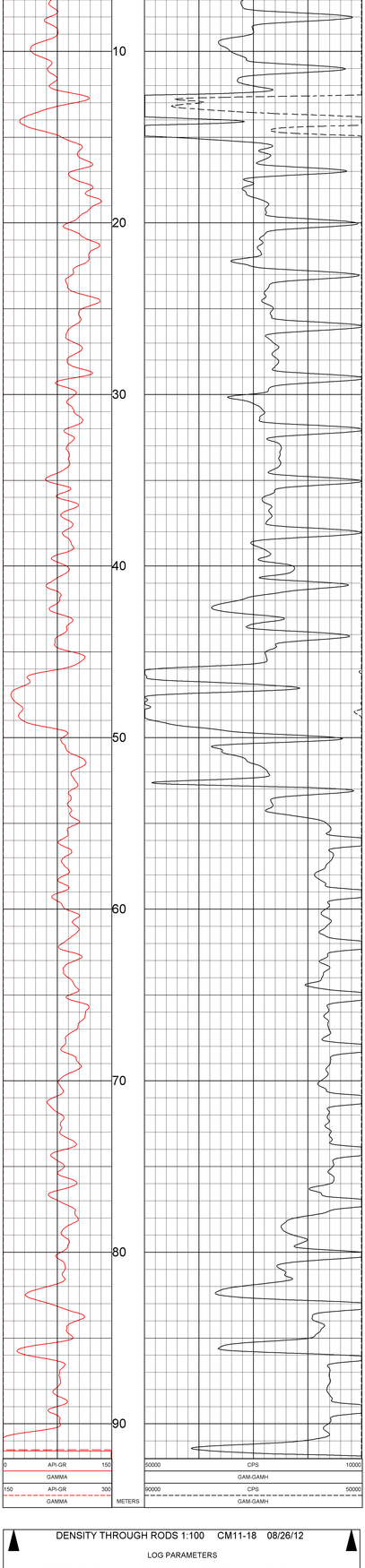
GAMMA-DENSITY (CPS) THROUGH RODS CM11-18

COMPANY: CROWN MOUNTAIN EXPLORATION
WELL: CM11-18
FIELD: WILDCAT
COUNTRY: CANADA
PROVINCE: ALBERTA
LSD: 1
SEC: 1
TWP: 1
RGE: 1
W6M
PERMANENT DATUM: GL
LOG MEASURED FROM: GL
DRILL MEASURED FROM: GL
ELEVATION KB: N/A
ELEVATION DF: N/A
ELEVATION GL: 1000
ELEVATIONS
KB: N/A
DF: N/A
GL: 1000
API#: N/A
LICENCE NO.: N/A
OTHER SERVICES: HIGH-RES DDV
DEPTH DRILLER: 1180.00
BIT SIZE: 120.65
DEPTH LOGGER: 1180.00
CASING SIZE: 177.80
CASING WEIGHT: 34.23
CASING GRADE: J55
CASING DEPTH: 1180.00
LOG TOP: 0.00
LOG BOTTOM: 1180.00
CASING LOGGER: 1180.00
BOTTOM HOLE TEMP: 25°C
RUN NUMBER: ONE
DATE: 08/26/12
TIME LOGGER ON BOTTOM: 05:30
TIME CIRC STOPPED: 06:00
UNIT NUMBER: 1
WITNESSED BY: N/A
RIG: 1
MAX HOLE DEVIATION: 0.00
BOREHOLE FLUID: WATER
RM TEMPERATURE: N/A
RM @ MEAS TEMP: N/A
RMF: N/A
RMF @ MEAS TEMP: N/A
RMC: N/A
RMC @ MEAS TEMP: N/A
SOURCE RMF: N/A
SOURCE RMC: N/A
RM @ BHT: N/A
TIME SINCE CIRC: 43:30
MAX REC TEMP: 25°C
EQUIP LOCATION: 0
RECORDED BY: 1
WITNESSED BY: N/A
RIG: 1
OPEN HOLE RUN#1 AT 4.50M
RUN#2 @ 1180.00M
RUN#3 @
RUN#4 @
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DENSITY THROUGH RODS 1:100 CM11-18 08/26/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 | NEUTRON MATRIX : SANDSTONE | MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3 | ELECT. CUTOFF : 99999 | BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-TR 0 08/25/2012 | VERSION = 3.64KF



DENSITY THROUGH RODS 1:100 CM11-18 08/26/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 | NEUTRON MATRIX : SANDSTONE | MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3 | ELECT. CUTOFF : 99999 | BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-TR 0 08/25/2012 | VERSION = 3.64KF

TOOL CALIBRATION CM11-18 08/26/12 08:24
TOOL 9005A TM VERSION 4
SERIAL NUMBER 59

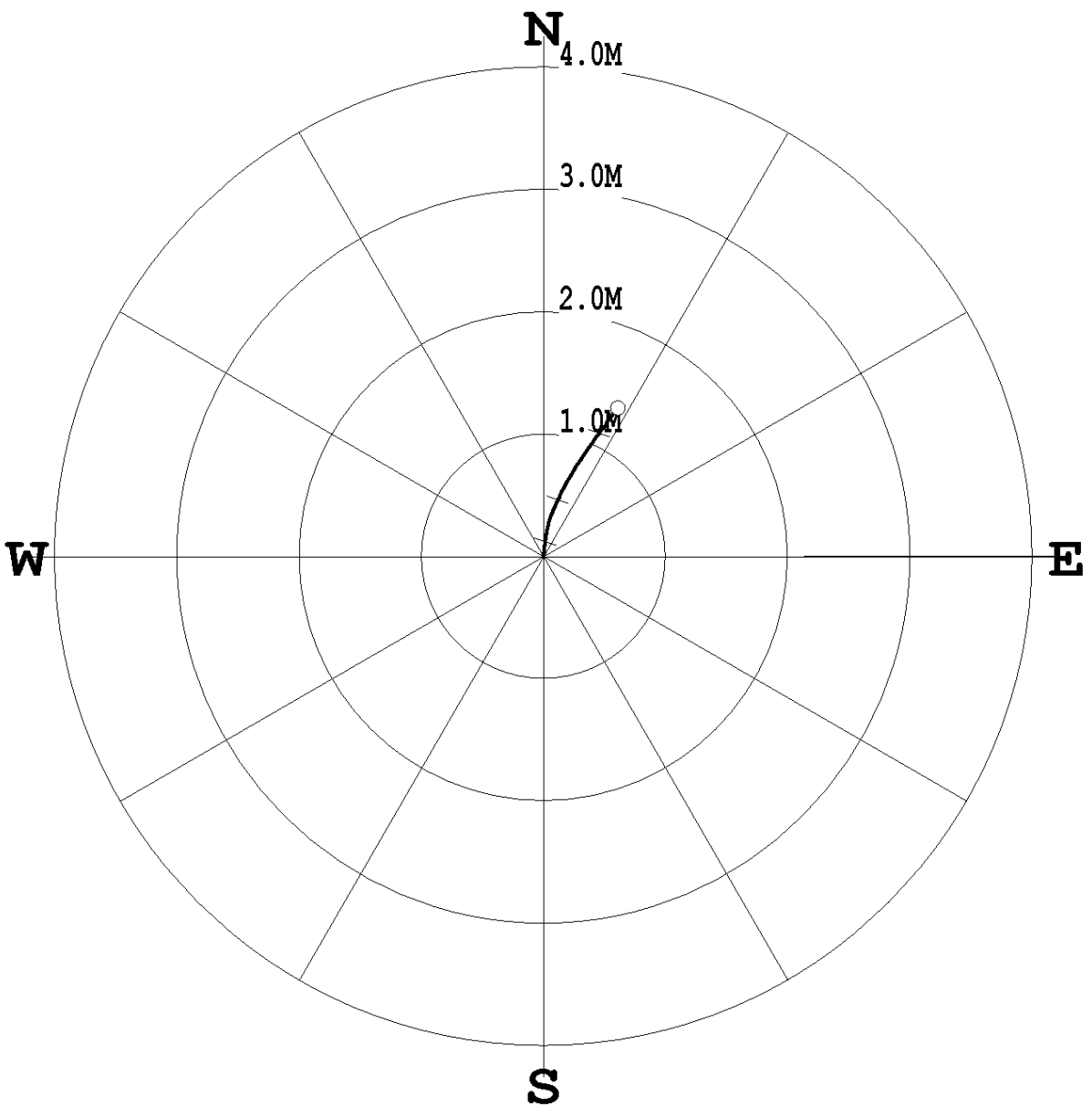
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02.12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02.12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	POROSITY	Default	[CPS]		
3	May12.08	08:20:59	RES	0.000	[OHM]	9876.000	[CPS]
	May12.08	08:20:59	RES	100.000	[OHM]	7976.000	[CPS]
4	May12.08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12.08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04.09	10:40:49	NEUTRON	0.000	[API-N]	1.000	[CPS]
	Dec04.09	10:40:49	NEUTRON	271.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-18
DATE OF LOG: 08/26/12
PROBE: 9055A 59

MAG DECL: 15.3

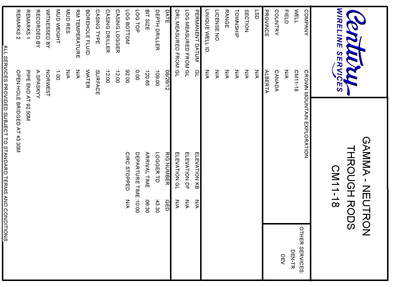
SCALE: 1 M/CM
TRUE DEPTH: 43.18 M
AZIMUTH: 26.6
DISTANCE: 1.4 M
+ = 10 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM11-18
FIELD OFFICE : CENTURY GEO DATE OF LOG : 08/26/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 15.300 DEPTH UNITS : METERS
LOG: CM11-18_08-26-12_09-53_9055A_.02_15.00_43.22_DEVI.log

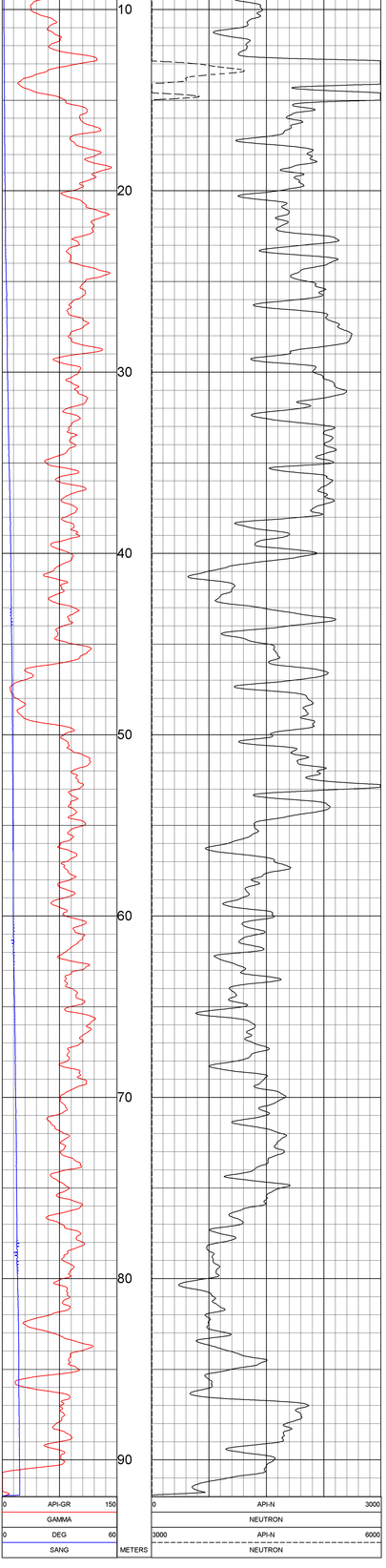
CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
15.02	15.02	0.00	-0.00	0.0	341.3	1.2	341.3
16.00	16.00	0.03	0.00	0.0	2.3	1.6	0.2
17.00	17.00	0.05	0.00	0.1	3.4	1.5	13.4
18.00	18.00	0.07	0.00	0.1	3.8	1.5	15.2
19.00	19.00	0.10	0.01	0.1	4.7	1.6	21.0
20.00	20.00	0.12	0.01	0.1	5.9	1.5	13.2
21.00	21.00	0.15	0.02	0.1	6.7	1.4	16.9
22.00	22.00	0.17	0.02	0.2	6.5	1.6	357.6
23.00	23.00	0.20	0.02	0.2	6.9	2.1	28.9
24.00	24.00	0.23	0.03	0.2	8.0	2.0	3.2
25.00	25.00	0.27	0.04	0.3	8.3	2.6	0.8
26.00	26.00	0.31	0.05	0.3	9.2	2.3	21.4
27.00	26.99	0.34	0.06	0.4	10.6	2.2	20.1
28.00	27.99	0.38	0.08	0.4	11.6	2.4	7.9
29.00	28.99	0.42	0.10	0.4	13.0	2.3	25.2
30.00	29.99	0.46	0.12	0.5	14.2	2.9	18.9
31.00	30.99	0.51	0.14	0.5	15.0	3.0	21.0
32.00	31.99	0.55	0.16	0.6	16.1	3.4	37.2
33.00	32.99	0.60	0.19	0.6	17.1	3.7	37.3
34.00	33.99	0.66	0.22	0.7	18.4	2.9	39.3
35.00	34.98	0.71	0.25	0.8	19.4	3.7	30.1
36.00	35.98	0.76	0.28	0.8	20.4	4.1	40.5
37.00	36.98	0.82	0.32	0.9	21.4	4.3	34.4
38.00	37.98	0.88	0.36	1.0	22.4	4.4	33.6
39.00	38.97	0.94	0.41	1.0	23.4	4.6	27.7
40.00	39.97	1.01	0.45	1.1	24.3	4.5	40.8
41.00	40.97	1.07	0.50	1.2	25.1	4.6	48.7
42.00	41.96	1.13	0.54	1.3	25.7	4.7	41.8
43.00	42.96	1.20	0.59	1.3	26.4	4.6	35.8
43.22	43.14	1.21	0.60	1.3	26.6	4.6	39.2



NEUTRON THROUGH RODS 1:100 CM11-18 08/26/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/19/2012 VERSION = 3.64KF



NEUTRON THROUGH RODS 1:100 CM11-18 08/26/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/19/2012 VERSION = 3.64KF

TOOL CALIBRATION CM11-18 08/26/12 08:24
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	POROSIT	Default	[CPS]		
3	May12,08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12,08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04,09	10:40:49	NEUTRO	0.000	[API-N]	1.000	[CPS]
	Dec04,09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-19

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-19
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:08/28/12	RIG NUMBER	:GED
DEPTH DRILLER	:172.00	LOGGER TD	:165.15
BIT SIZE	:120.65	ARRIVAL TIME	:10:00
LOG TOP	:0.00	DEPARTURE TIME	:16:30
LOG BOTTOM	:164.99	CIRC STOPPED	:N/A
CASING LOGGER	:12.40		
CASING DRILLER	:12.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

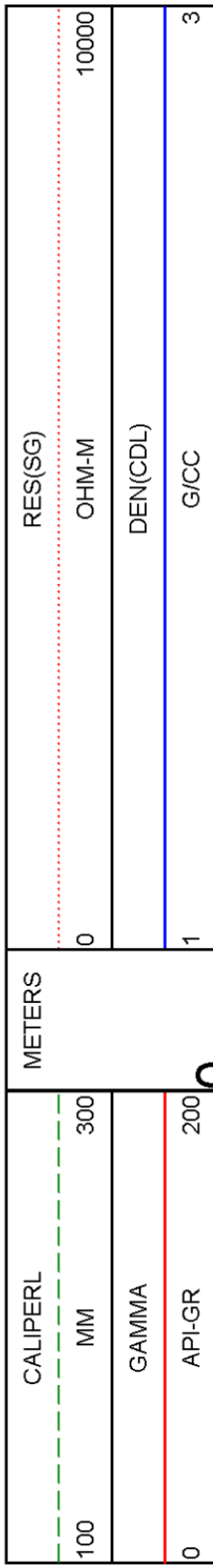
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

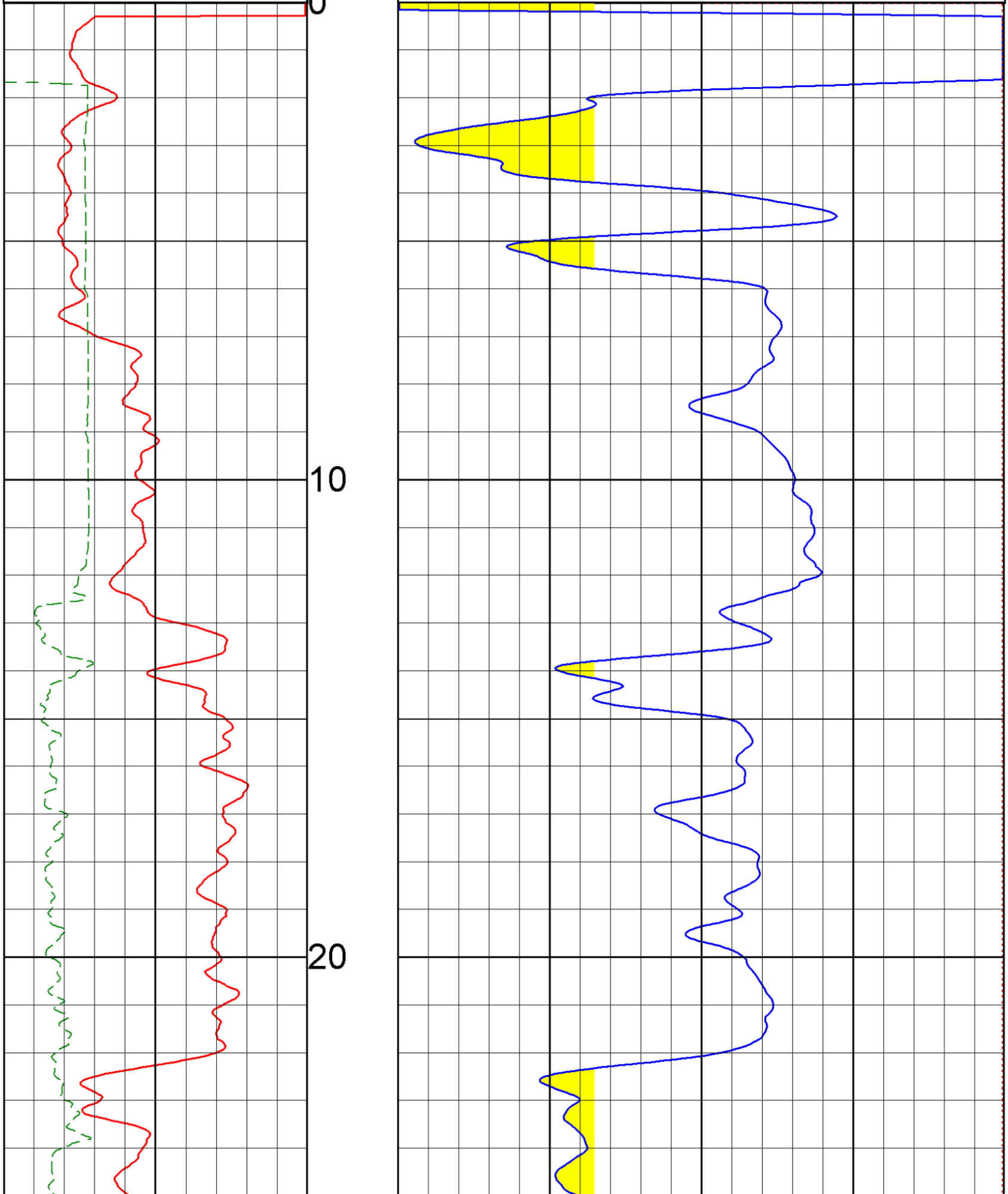
DENSITY 1:100 CM11-19 08/28/12

LOG PARAMETERS

MATRIX DENSITY :	2.65	NEUTRON MATRIX :	SANDSTONE
MAGNETIC DECL :	15.3	ELECT. CUTOFF	: 99999
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-RES.0 08/21/2012		

MATRIX DELTA T :	177
BIT SIZE	: 120.65
VERSION	= 3.64KF

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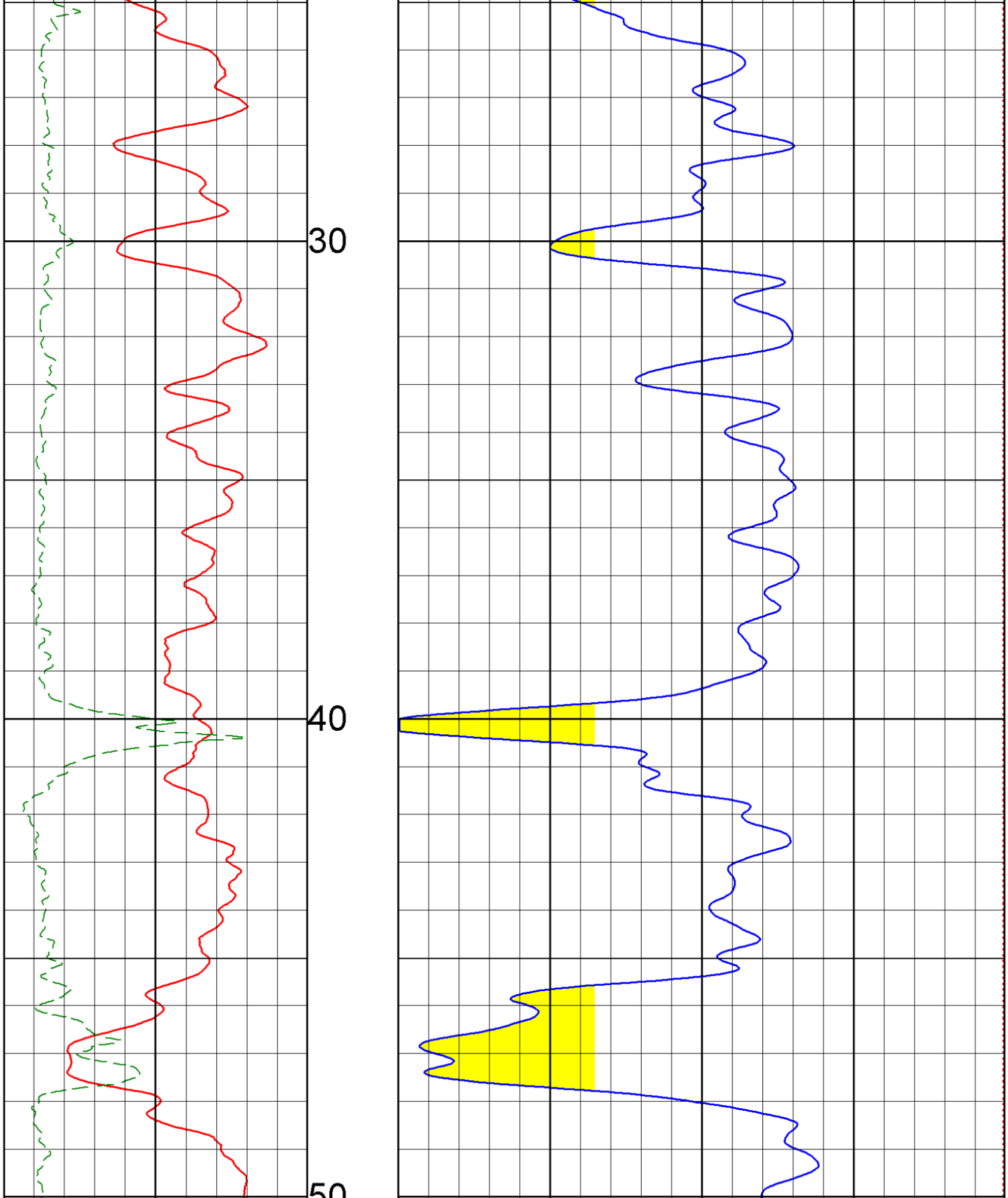
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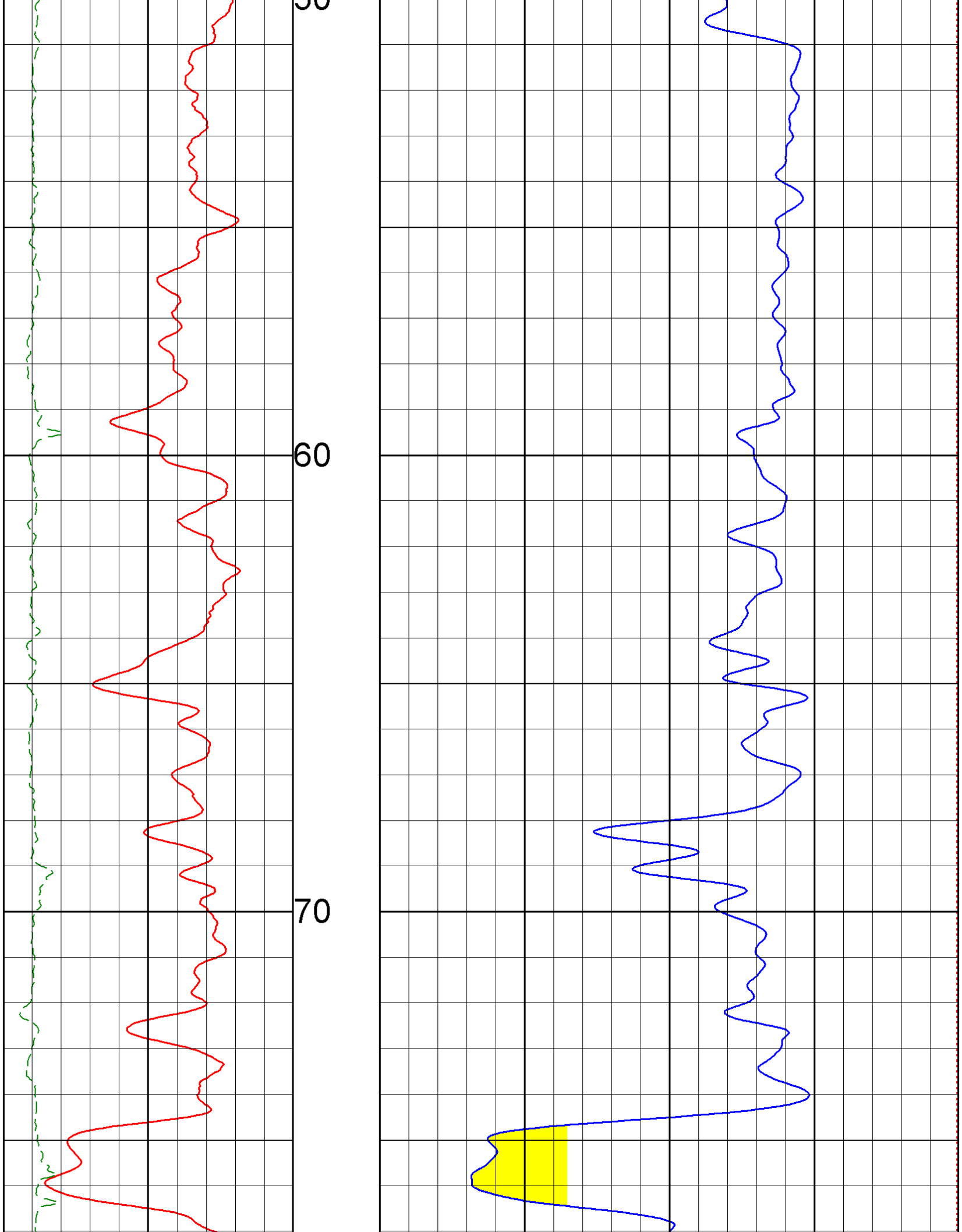
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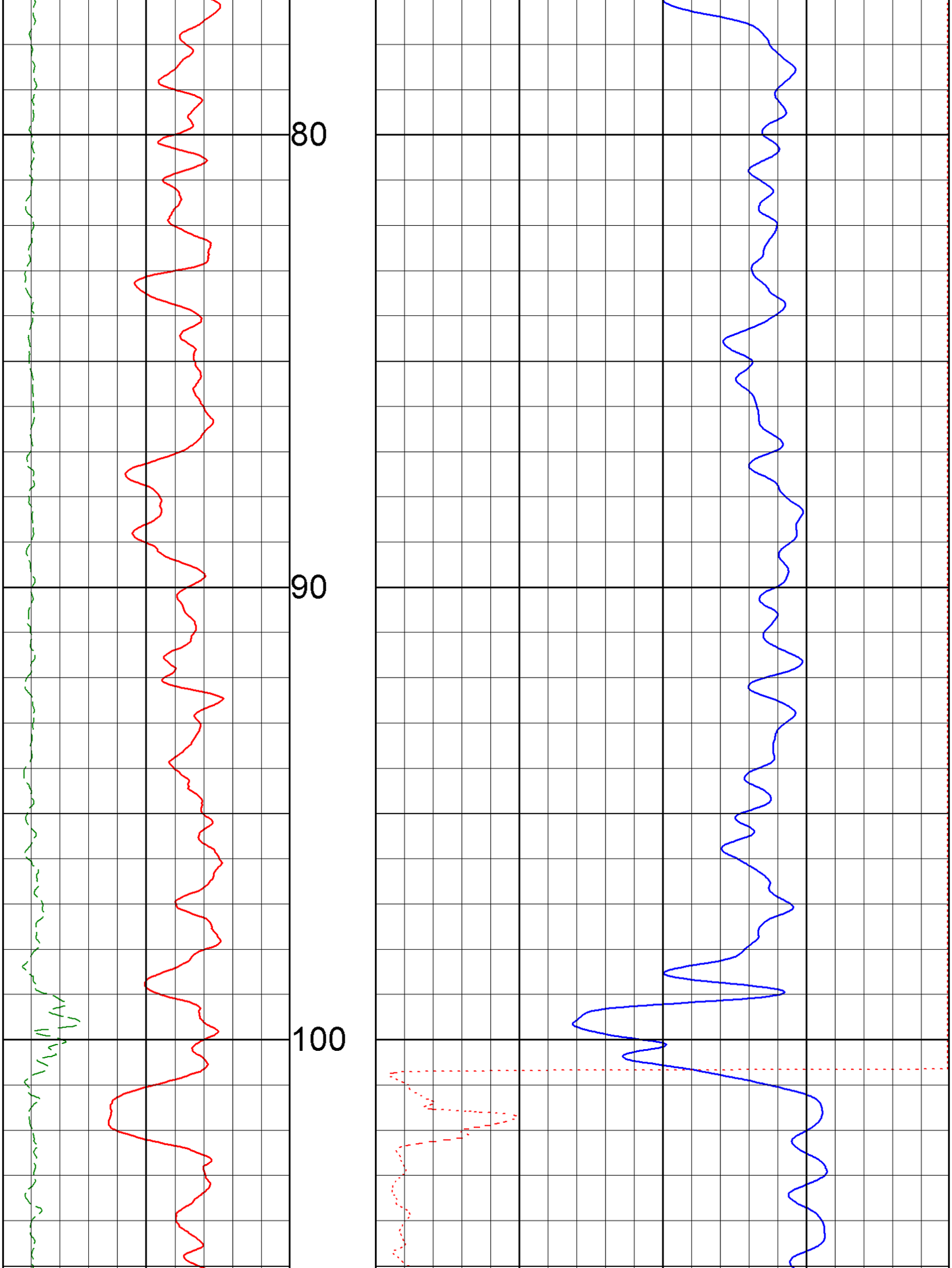
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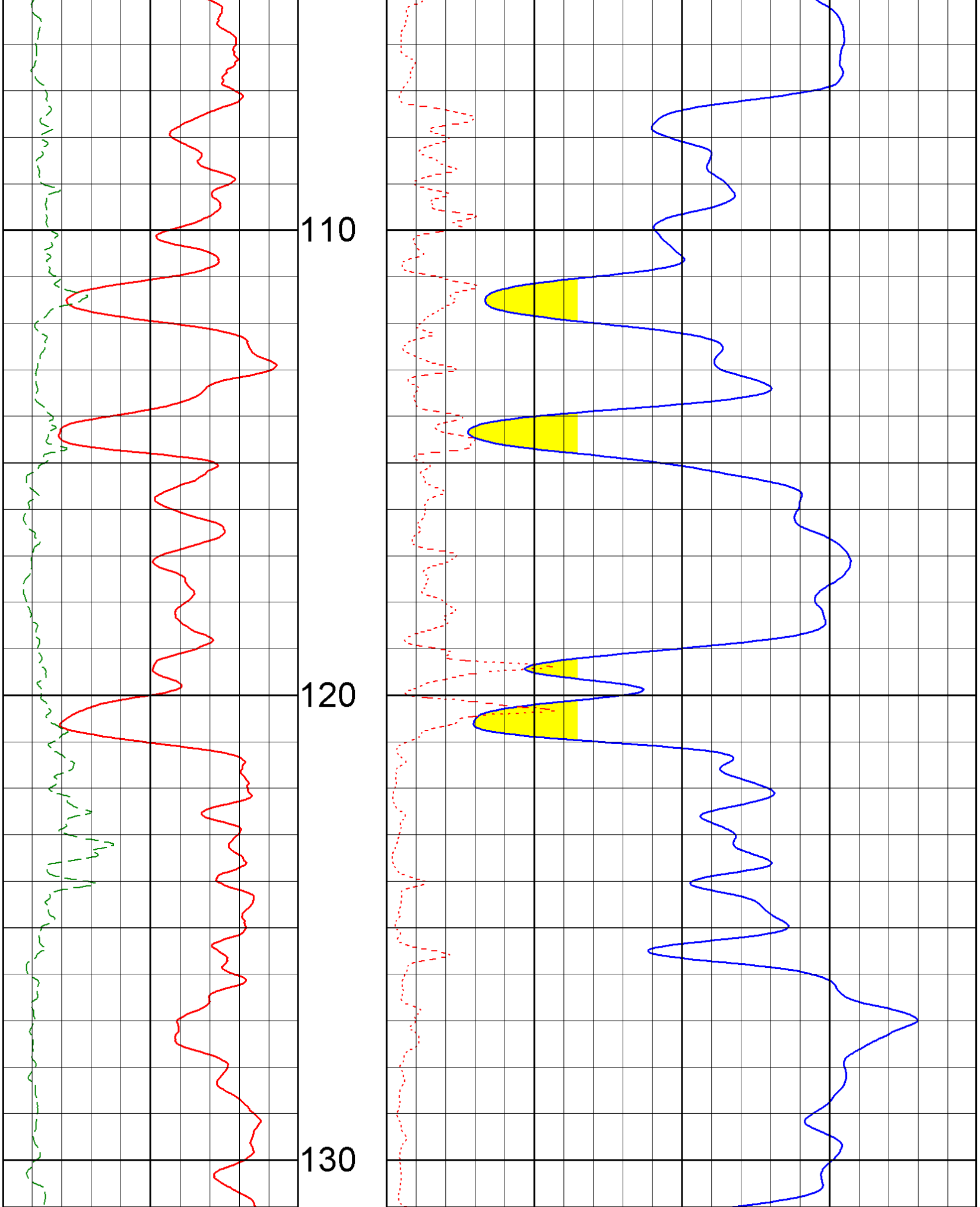
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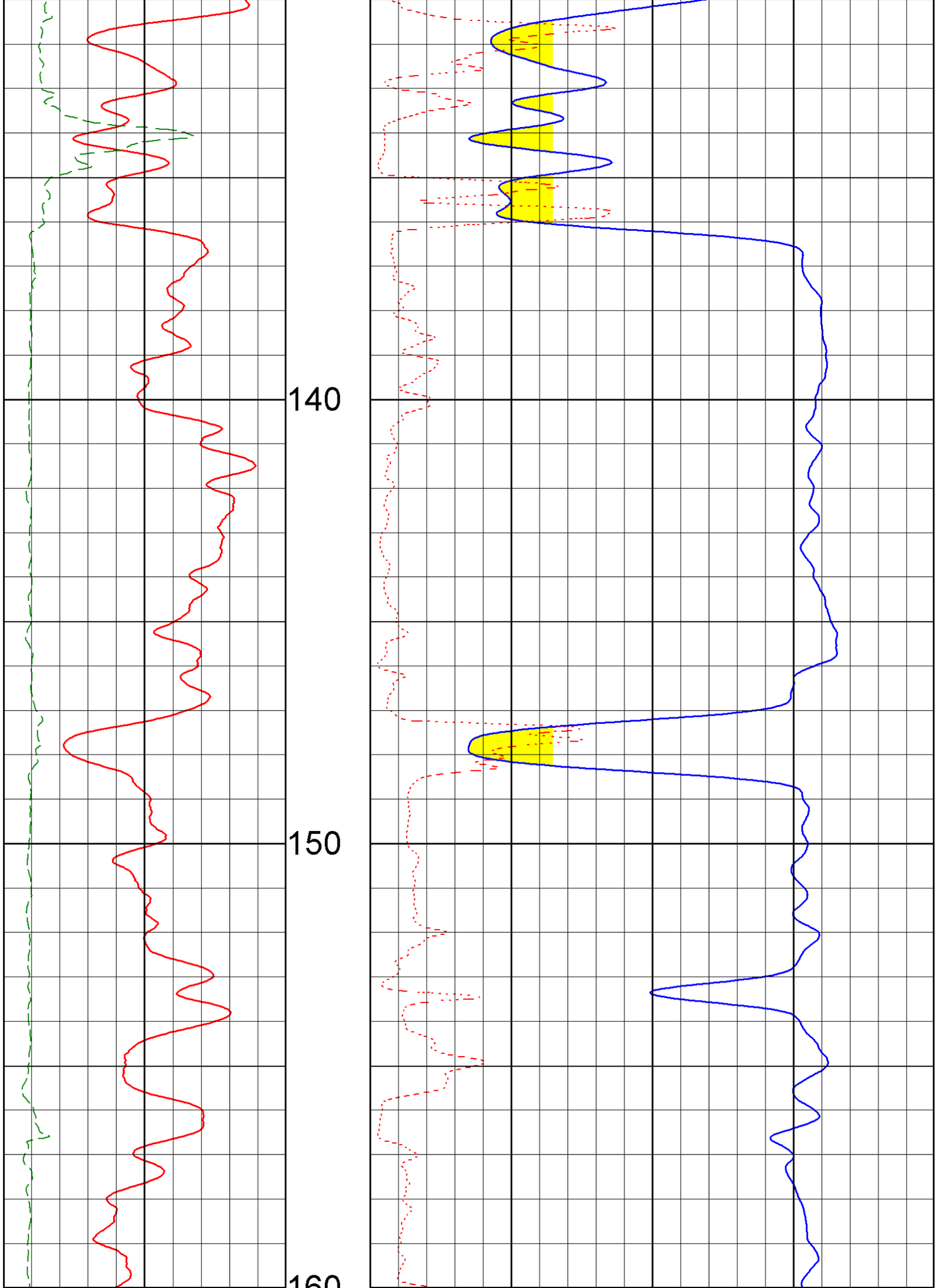
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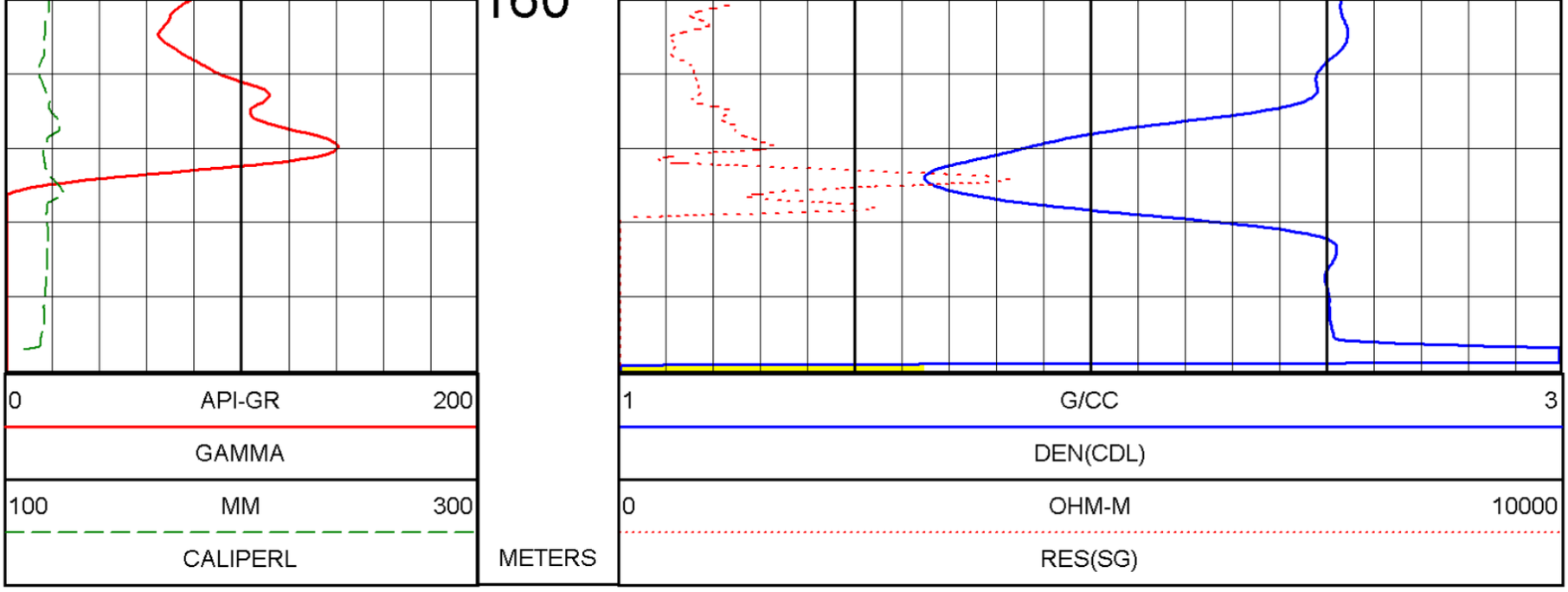


DENSITY 1:100 CM11-19 08/28/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-19 08/28/12 15:50
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

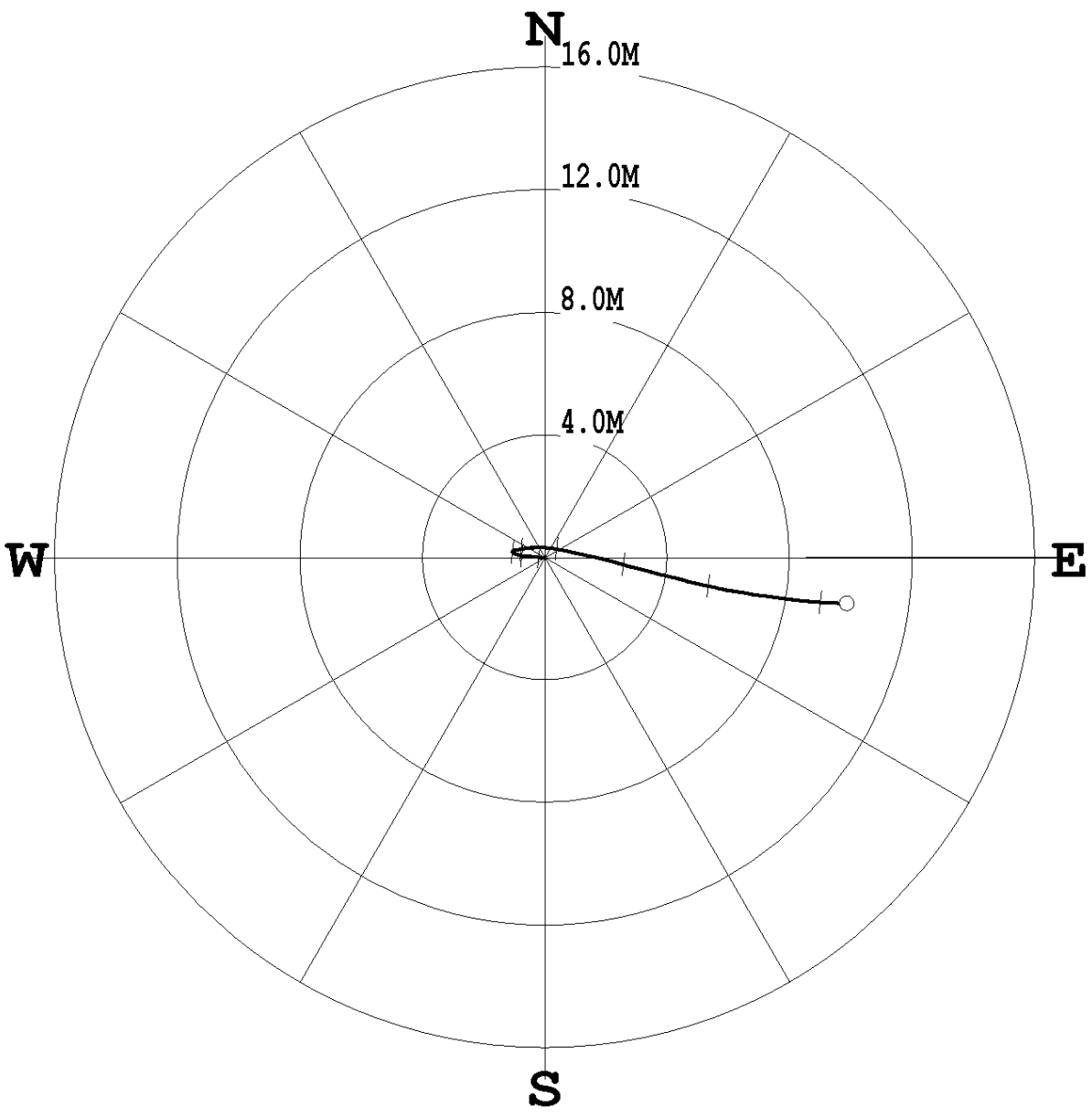
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-19
DATE OF LOG: 08/28/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 2 M/CM
TRUE DEPTH: 164.19 M
AZIMUTH: 98.7
DISTANCE: 10.0 M
+ = 20 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM11-19
FIELD OFFICE : CENTURY GEO DATE OF LOG : 08/28/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 15.300 DEPTH UNITS : METERS
LOG: CM11-19_08-28-12_15-09_9055A_.02_15.00_165.01_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
15.02	15.02	-0.00	-0.00	0.0	260.8	2.4	260.8
16.00	16.00	-0.00	-0.04	0.0	266.3	2.4	281.4
17.00	17.00	0.00	-0.09	0.1	271.8	2.3	274.8
18.00	18.00	0.00	-0.12	0.1	271.9	2.1	268.8
19.00	19.00	0.01	-0.17	0.2	273.1	1.9	280.5
20.00	20.00	0.02	-0.21	0.2	274.2	2.3	276.9
21.00	20.99	0.02	-0.25	0.2	274.4	2.3	280.1
22.00	21.99	0.02	-0.29	0.3	274.5	2.2	273.8
23.00	22.99	0.03	-0.32	0.3	274.6	2.1	273.8
24.00	23.99	0.03	-0.36	0.4	274.5	1.9	272.3
25.00	24.99	0.03	-0.39	0.4	274.7	1.9	276.4
26.00	25.99	0.04	-0.42	0.4	274.8	1.9	265.8
27.00	26.99	0.04	-0.45	0.5	275.2	1.6	275.4
28.00	27.99	0.04	-0.48	0.5	274.9	1.4	267.5
29.00	28.99	0.04	-0.51	0.5	275.0	1.6	273.4
30.00	29.99	0.05	-0.54	0.5	275.1	1.6	277.1
31.00	30.99	0.05	-0.57	0.6	275.2	1.5	271.7
32.00	31.99	0.05	-0.59	0.6	275.3	1.5	273.7
33.00	32.99	0.06	-0.62	0.6	275.2	1.3	274.8
34.00	33.99	0.06	-0.64	0.6	275.2	1.3	266.0
35.00	34.99	0.06	-0.66	0.7	275.4	1.9	271.1
36.00	35.99	0.06	-0.68	0.7	275.3	1.2	262.9
37.00	36.99	0.06	-0.70	0.7	275.3	1.0	284.5
38.00	37.99	0.07	-0.72	0.7	275.3	1.6	275.9
39.00	38.99	0.07	-0.74	0.7	275.3	1.0	228.8
40.00	39.99	0.07	-0.76	0.8	275.2	1.7	275.2
41.00	40.99	0.07	-0.77	0.8	275.2	0.7	256.0
42.00	41.99	0.07	-0.79	0.8	275.2	1.8	291.6
43.00	42.99	0.08	-0.81	0.8	275.6	1.4	286.2
44.00	43.99	0.08	-0.83	0.8	275.6	0.9	276.0
45.00	44.99	0.09	-0.85	0.8	275.8	2.3	324.0
46.00	45.99	0.09	-0.87	0.9	276.1	1.4	267.5
47.00	46.99	0.10	-0.89	0.9	276.4	1.1	285.1
48.00	47.99	0.10	-0.91	0.9	276.5	0.6	287.5
49.00	48.99	0.11	-0.93	0.9	276.6	1.3	287.5
50.00	49.99	0.12	-0.95	1.0	277.0	1.1	291.8
51.00	50.98	0.12	-0.97	1.0	277.3	0.9	296.4
52.00	51.98	0.13	-0.98	1.0	277.6	0.9	293.1
53.00	52.98	0.14	-1.00	1.0	277.8	1.1	269.8
54.00	53.98	0.14	-1.01	1.0	278.1	0.9	295.3
55.00	54.98	0.15	-1.02	1.0	278.4	0.6	310.5
56.00	55.98	0.16	-1.03	1.0	278.7	0.9	303.5
57.00	56.98	0.16	-1.04	1.1	279.0	1.0	311.7
58.00	57.98	0.17	-1.05	1.1	279.2	0.6	315.4
59.00	58.98	0.17	-1.06	1.1	279.4	0.6	309.1
60.00	59.98	0.18	-1.06	1.1	279.6	0.2	5.4
61.00	60.98	0.18	-1.07	1.1	279.8	0.5	324.9
62.00	61.98	0.19	-1.07	1.1	280.1	0.1	8.9
63.00	62.98	0.19	-1.07	1.1	280.4	0.3	335.8
64.00	63.98	0.20	-1.07	1.1	280.6	0.4	40.8
65.00	64.98	0.21	-1.06	1.1	281.0	0.3	32.2
66.00	65.98	0.21	-1.06	1.1	281.4	0.6	92.9
67.00	66.98	0.22	-1.06	1.1	281.6	0.4	85.0
68.00	67.98	0.22	-1.05	1.1	281.7	0.4	82.8
69.00	68.98	0.22	-1.05	1.1	282.0	0.3	26.6
70.00	69.98	0.23	-1.04	1.1	282.3	0.8	70.9
71.00	70.98	0.23	-1.03	1.1	282.8	0.7	62.0
72.00	71.98	0.24	-1.01	1.0	283.4	1.3	87.7
73.00	72.98	0.24	-0.99	1.0	283.9	1.5	74.6
74.00	73.98	0.25	-0.97	1.0	284.5	1.4	64.8
75.00	74.98	0.25	-0.94	1.0	285.1	1.5	83.3
76.00	75.98	0.26	-0.92	1.0	285.8	1.6	79.0
77.00	76.98	0.26	-0.88	0.9	286.5	1.8	76.8
78.00	77.98	0.27	-0.85	0.9	287.4	1.9	92.8
79.00	78.98	0.27	-0.82	0.9	288.3	2.1	86.2
80.00	79.98	0.27	-0.78	0.8	289.3	2.2	72.1
81.00	80.98	0.28	-0.75	0.8	290.6	2.0	44.1
82.00	81.98	0.29	-0.71	0.8	292.2	2.3	75.7
83.00	82.98	0.30	-0.67	0.7	293.9	2.2	76.2
84.00	83.98	0.31	-0.63	0.7	296.0	2.3	76.8
85.00	84.98	0.32	-0.59	0.7	298.2	2.6	75.8
86.00	85.97	0.32	-0.55	0.6	300.3	2.6	88.7
87.00	86.97	0.32	-0.50	0.6	302.9	3.0	89.2
88.00	87.97	0.33	-0.45	0.6	305.8	3.0	82.1
89.00	88.97	0.33	-0.39	0.5	309.6	3.4	86.5
90.00	89.97	0.33	-0.33	0.5	314.4	3.6	86.6
91.00	90.97	0.33	-0.28	0.4	319.8	2.4	101.7
92.00	91.96	0.33	-0.21	0.4	327.4	3.7	84.3
93.00	92.96	0.33	-0.14	0.4	336.6	4.2	91.7
94.00	93.96	0.33	-0.08	0.3	346.9	3.7	93.3
95.00	94.96	0.33	-0.01	0.3	358.6	3.9	90.9
96.00	95.95	0.32	0.07	0.3	11.6	4.6	95.4
97.00	96.95	0.31	0.15	0.3	24.8	4.8	83.1
98.00	97.95	0.30	0.22	0.4	36.0	4.6	96.8
99.00	98.95	0.29	0.30	0.4	45.6	4.8	107.3
100.00	99.94	0.28	0.37	0.5	52.9	4.6	92.6
101.00	100.94	0.26	0.45	0.5	59.5	4.1	89.4
102.00	101.94	0.25	0.53	0.6	64.8	5.0	102.5
103.00	102.93	0.24	0.62	0.7	69.1	5.2	97.7
104.00	103.93	0.22	0.71	0.7	72.8	5.3	97.4
105.00	104.92	0.20	0.80	0.8	76.3	5.8	102.7
106.00	105.92	0.17	0.90	0.9	79.3	6.0	107.4
107.00	106.91	0.15	1.01	1.0	81.7	6.3	100.7
108.00	107.91	0.12	1.11	1.1	83.6	6.4	104.3
109.00	108.90	0.10	1.22	1.2	85.3	6.5	97.0
110.00	109.89	0.08	1.33	1.3	86.7	6.8	105.2
111.00	110.89	0.05	1.45	1.5	87.8	7.0	112.2
112.00	111.88	0.03	1.56	1.6	89.0	6.5	91.6
113.00	112.87	0.00	1.69	1.7	90.0	7.0	101.2
114.00	113.86	-0.02	1.80	1.8	90.8	7.0	102.1
115.00	114.86	-0.05	1.92	1.9	91.6	6.8	109.9
116.00	115.85	-0.08	2.04	2.0	92.4	7.2	113.8
117.00	116.84	-0.12	2.16	2.2	93.1	7.0	105.5
118.00	117.83	-0.15	2.28	2.3	93.7	7.1	101.2
119.00	118.82	-0.19	2.40	2.4	94.4	7.7	104.6
120.00	119.82	-0.22	2.53	2.5	95.0	7.4	108.2
121.00	120.81	-0.26	2.65	2.7	95.7	7.6	108.0
122.00	121.80	-0.29	2.79	2.8	96.0	7.8	103.6
123.00	122.79	-0.33	2.92	2.9	96.4	7.7	104.2
124.00	123.78	-0.36	3.05	3.1	96.7	7.8	111.3
125.00	124.77	-0.39	3.18	3.2	97.1	7.9	103.9
126.00	125.76	-0.43	3.31	3.3	97.3	7.9	100.9
127.00	126.75	-0.46	3.45	3.5	97.7	8.0	101.1
128.00	127.74	-0.50	3.58	3.6	97.9	8.2	106.7
129.00	128.73	-0.54	3.72	3.8	98.3	8.1	105.0
130.00	129.72	-0.57	3.86	3.9	98.4	8.3	102.6
131.00	130.71	-0.60	4.00	4.0	98.6	8.3	106.0
132.00	131.70	-0.64	4.13	4.2	98.8	8.1	104.0
133.00	132.69	-0.67	4.27	4.3	98.9	8.2	101.2
134.00	133.68	-0.70	4.41	4.5	99.0	7.8	107.8
135.00	134.67	-0.74	4.55	4.6	99.2	8.3	109.7
136.00	135.66	-0.79	4.68	4.7	99.5	8.4	100.3
137.00	136.65	-0.82	4.83	4.9	99.6	8.8	102.7
138.00	137.64	-0.85	4.97	5.0	99.7	8.4	105.7
139.00	138.62	-0.88	5.12	5.2	99.8	8.7	105.5
140.00	139.61	-0.92	5.27	5.3	99.9	8.1	106.2
141.00	140.60	-0.95	5.42	5.5	99.9	8.9	97.4
142.00	141.59	-0.98	5.57	5.7	99.9	8.9	108.3
143.00	142.58	-1.02	5.72	5.8	100.1	9.3	96.8
144.00	143.56	-1.05	5.88	6.0	100.1	9.3	102.6
145.00	144.55	-1.08	6.05	6.1	100.1	9.8	94.9
146.00	145.53	-1.10	6.22	6.3	100.1	10.2	108.0
147.00	146.52	-1.13	6.39	6.5	100.0	10.5	94.4
148.00	147.50	-1.16	6.57	6.7	100.0	10.4	97.6
149.00	148.49	-1.19	6.74	6.8	100.0	10.4	110.9
150.00	149.47	-1.22	6.92	7.0	100.0	10.6	99.0
151.00	150.45	-1.24	7.10	7.2	99.9	10.7	97.9
152.00	151.44	-1.26	7.29	7.4	99.8	10.7	103.2
153.00	152.42	-1.29	7.47	7.6	99.8	10.9	98.1
154.00	153.40	-1.32	7.66	7.8	99.7	11.3	94.5
155.00	154.38	-1.34	7.85	8.0	99.7	11.7	93.8
156.00	155.36	-1.37	8.05	8.2	99.6	11.6	97.4
157.00	156.34	-1.39	8.24	8.4	99.6	11.4	104.2
158.00	157.32	-1.41	8.44	8.6	99.5	11.2	94.0
159.00	158.30	-1.43	8.64	8.8	99.4	12.2	88.9
160.00	159.28	-1.44	8.84	9.0	99.3	11.7	94.8
161.00	160.26	-1.46	9.04	9.2	99.2	11.7	92.0
162.00	161.24	-1.46	9.24	9.4	99.0	11.6	93.5
163.00	162.22	-1.48	9.45	9.6	98.9	11.8	93.5
164.00	163.20	-1.49	9.65	9.8	98.8	11.7	91.1
165.00	164.17	-1.50	9.86	10.0	98.7	11.7	94.4
165.02	164.16	-1.50	9.85	10.0	98.7	11.7	94.4

| | | |

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-20

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-20
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:BRITISH COLUMBIA

OTHER SERVICES:
DEV
DEN TR
NEU TR

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

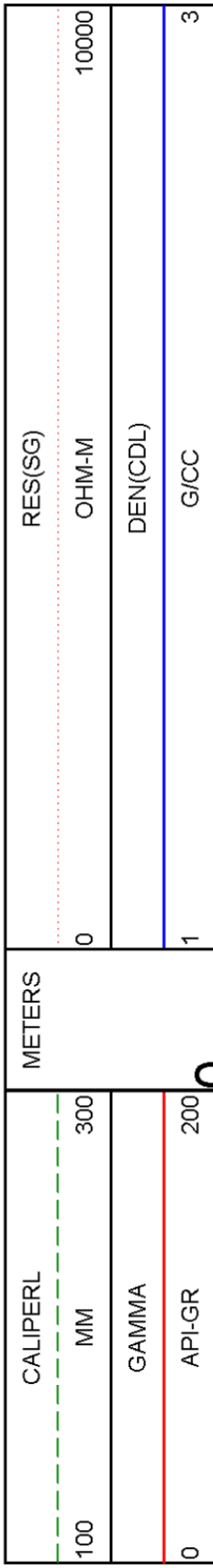
DATE	:08/27/12	RIG NUMBER	:GED
DEPTH DRILLER	:131.00	LOGGER TD	:128.50
BIT SIZE	:120.65	ARRIVAL TIME	:12:00
LOG TOP	:0.00	DEPARTURE TIME	:17:00
LOG BOTTOM	:128.16	CIRC STOPPED	:N/A
CASING LOGGER	:9.40		
CASING DRILLER	:9.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:M. ESKRICK		
RECORDED BY	:M. LEBEDA		
REMARKS 1	:VERTICAL		
REMARKS 2	:WATER LEVEL @ 74.2M		

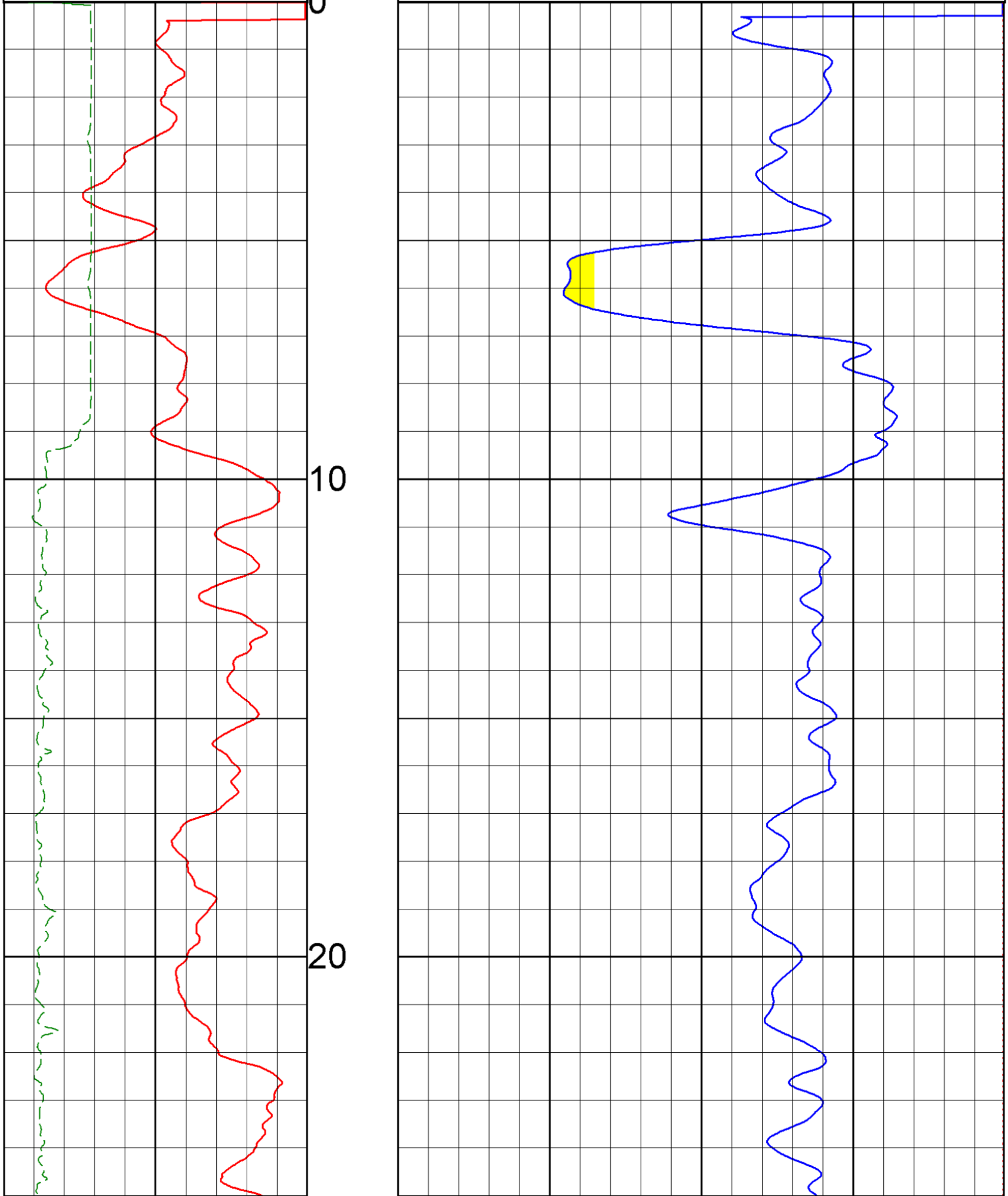
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAMMA DENSITY 1:100 CM11-20 08/27/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/23/2012		VERSION = 3.64KF	

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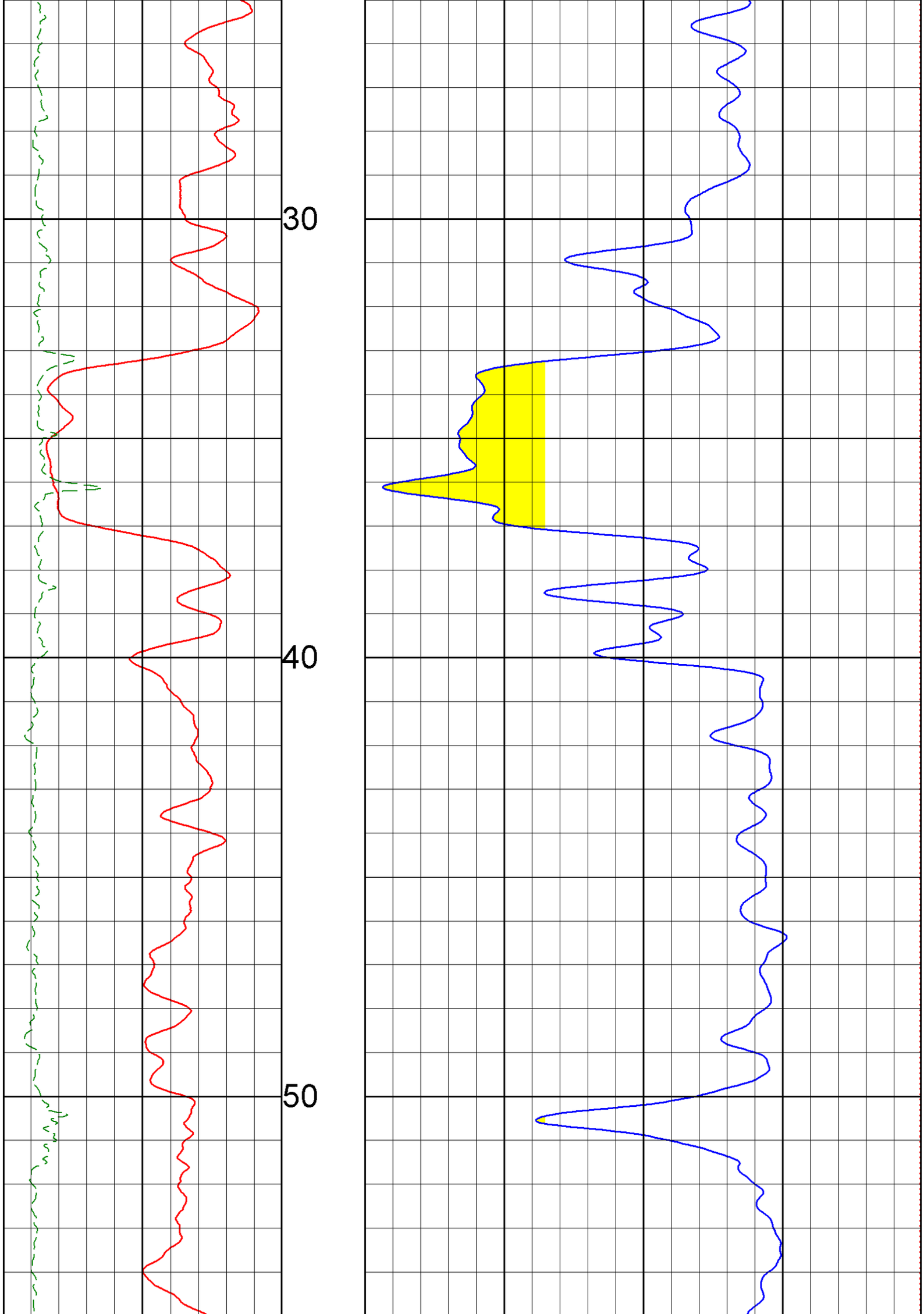
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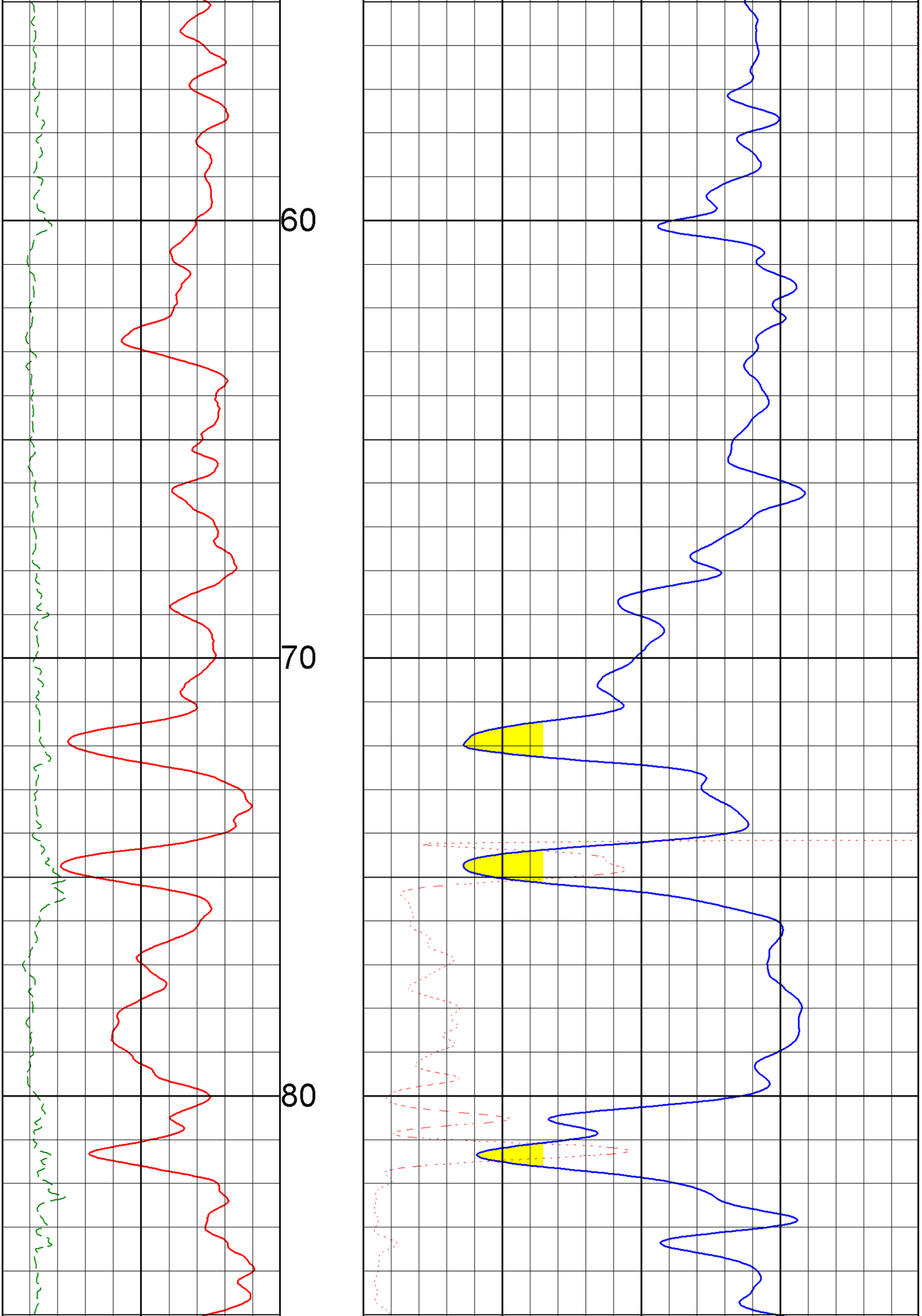
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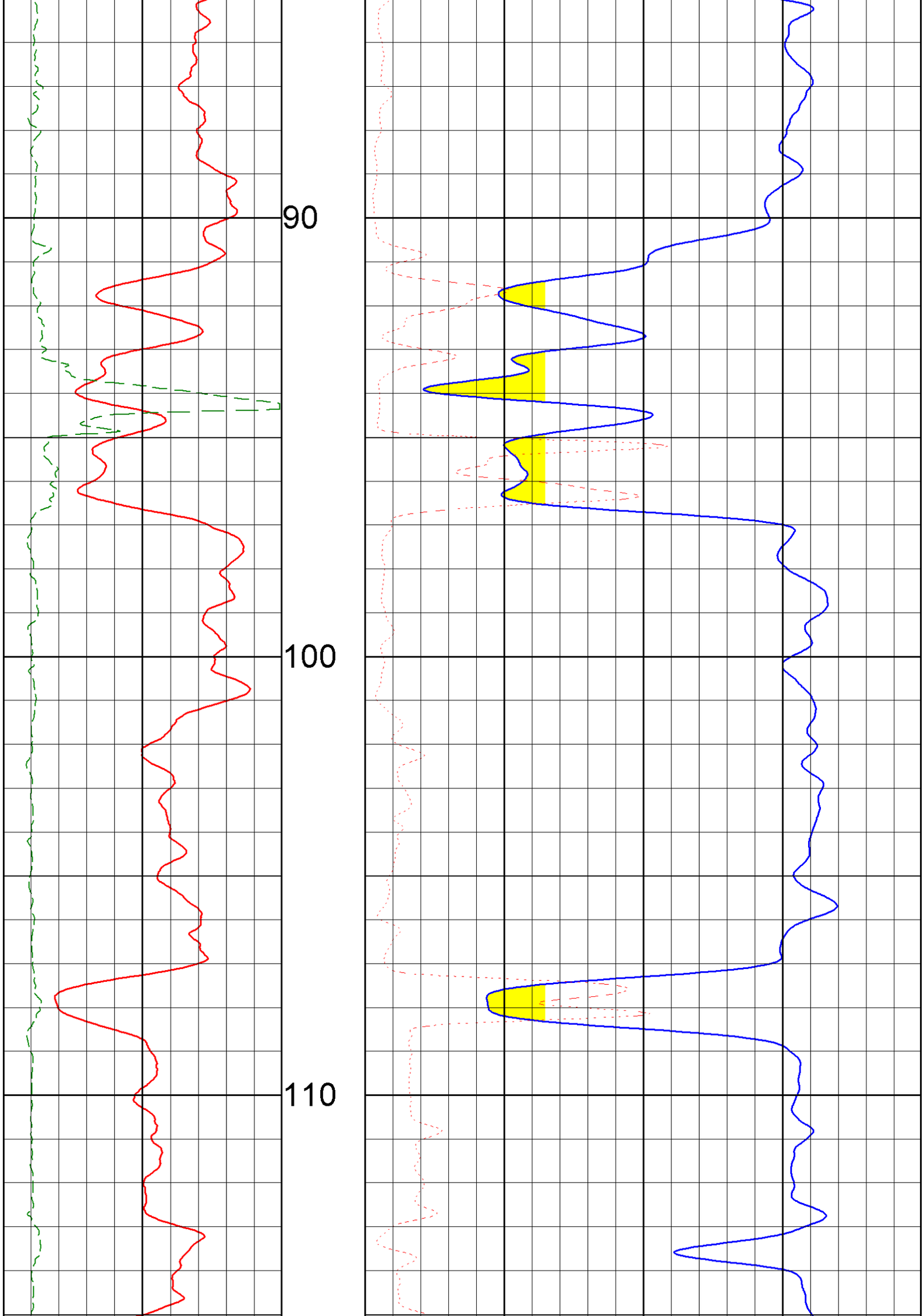
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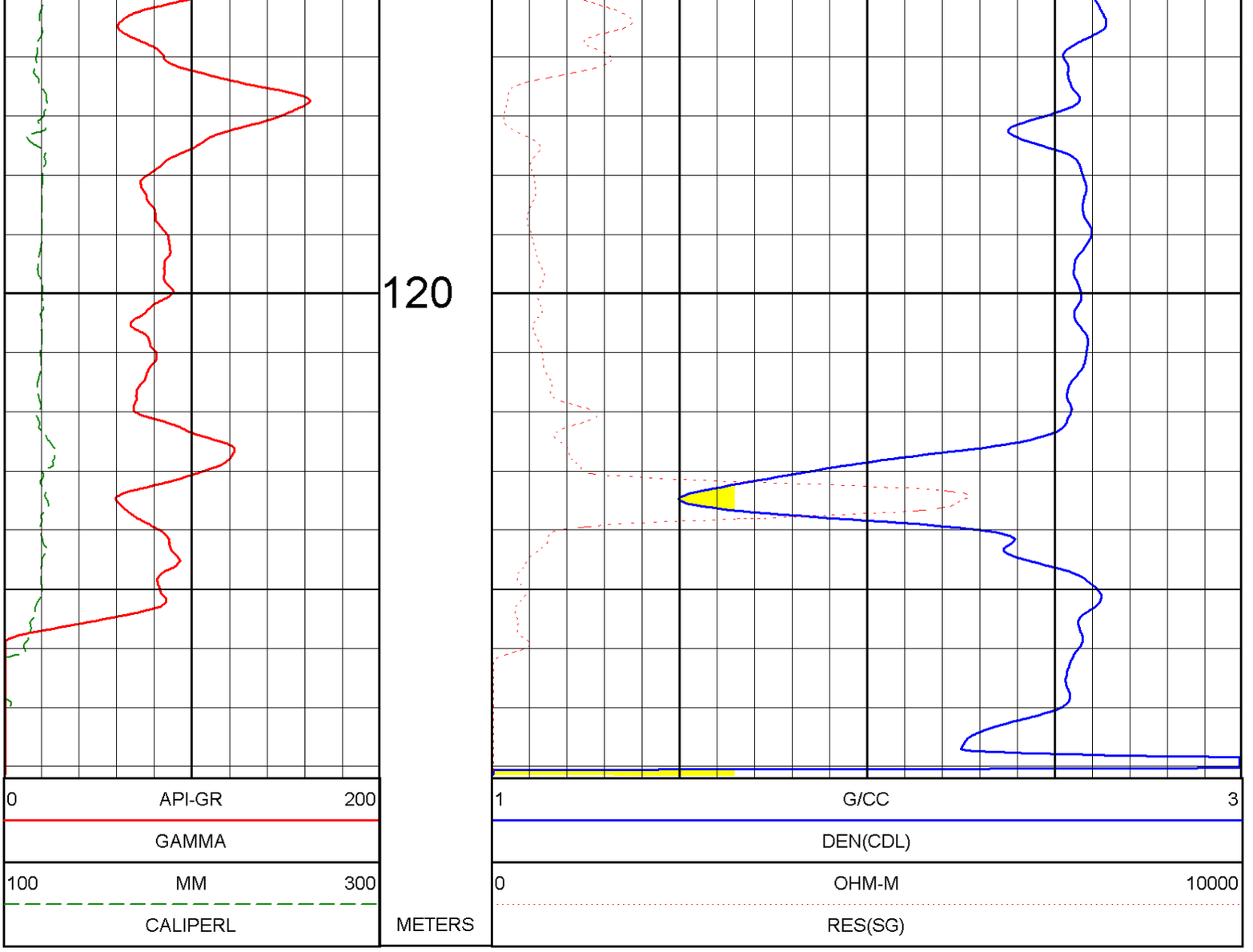


GAMMA DENSITY 1:100 CM11-20 08/27/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/23/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-20 08/27/12 15:55
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 2404

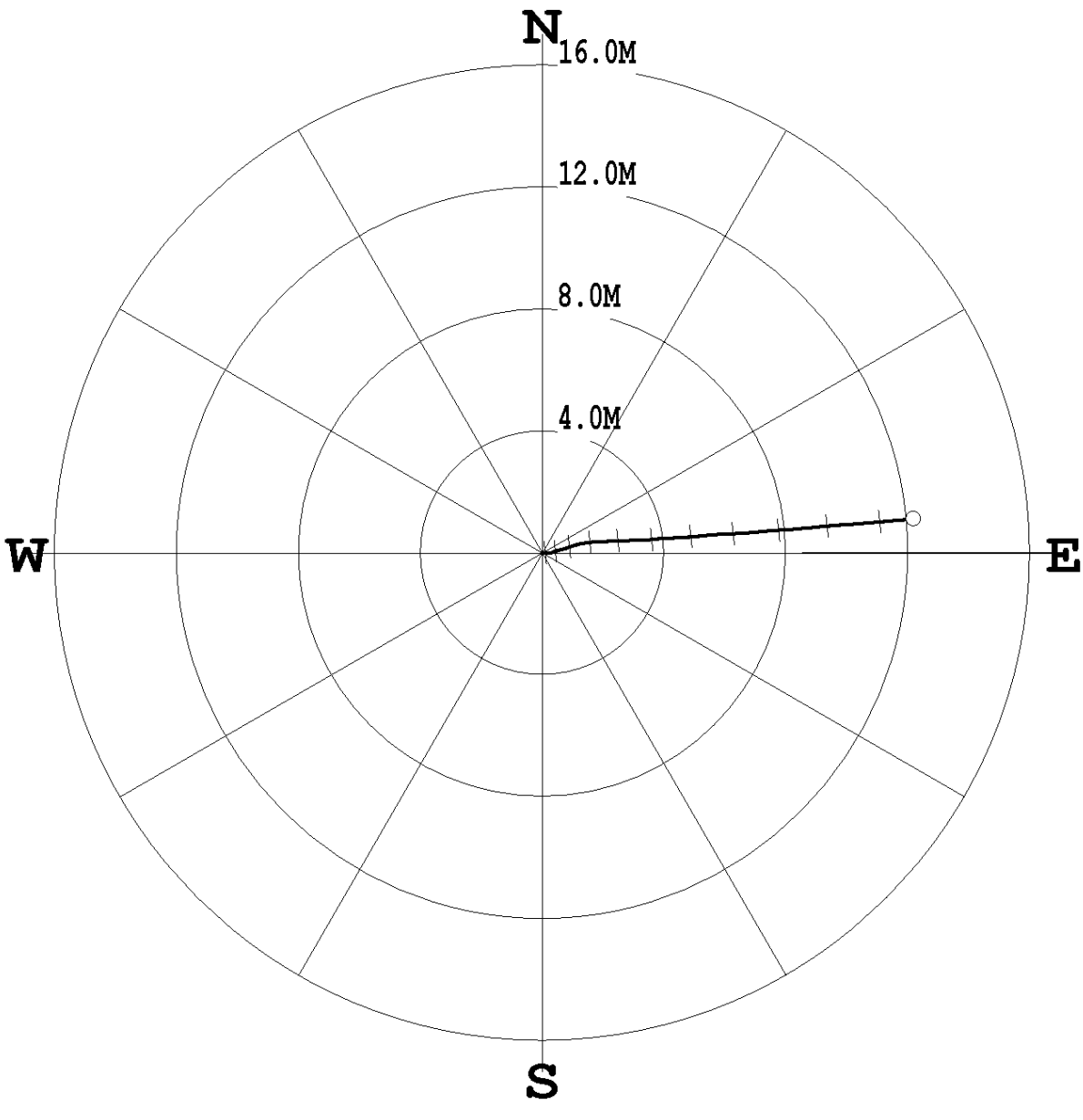
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Jun02,12	16:01:05	GAMMA	0.000	[API-GR]	4.000	[CPS]
	Jun02,12	16:01:05	GAMMA	545.000	[API-GR]	635.000	[CPS]
2	Jun02,12	16:20:27	VOLTAGE	23.000	[MV]	6860.000	[CPS]
	Jun02,12	16:20:27	VOLTAGE	225.000	[MV]	34055.000	[CPS]
3	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
	Jun02,12	16:00:49	CALIPER	Default	[CPS]	Default	[CPS]
4	Jun02,12	16:01:58	DEN(LS)	1.620	[G/CC]	13852.000	[CPS]
	Jun02,12	16:01:58	DEN(LS)	2.612	[G/CC]	1895.000	[CPS]
5	Jun02,12	16:02:26	DEN(SS)	1.590	[G/CC]	45738.000	[CPS]
	Jun02,12	16:02:26	DEN(SS)	2.580	[G/CC]	18052.000	[CPS]
6	Jul02,12	19:44:14	CALIPERL	100.000	[MM]	236854.000	[CPS]
	Jul02,12	19:44:14	CALIPERL	200.000	[MM]	339407.000	[CPS]
7	Jun02,12	16:20:44	CURRENT	23.000	[UA]	2925.000	[CPS]
	Jun02,12	16:20:44	CURRENT	225.000	[UA]	18770.000	[CPS]
8	Jun02,12	16:00:49	F	Default	[CPS]		
9	Jun02,12	16:00:49	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-20
DATE OF LOG: 08/27/12
PROBE: 9058A 2631 1

MAG DECL: 15.0

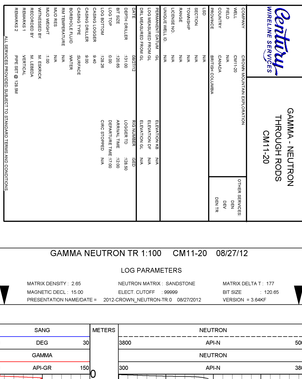
SCALE: 2 M/CM
TRUE DEPTH: 126.19 M
AZIMUTH: 84.8
DISTANCE: 12.2 M
+ = 10 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
HOLE ID. : CM11-20
FIELD OFFICE : CENTURY GEO
DATE OF LOG : 08/27/12
DATA FROM : N/A
PROBE : 9058A , 2631
MAG. DECL. : 15.000
DEPTH UNITS : METERS
LOG: CM11-20_08-27-12_15-28_9058A_.02_15.00_127.00_DEVI.log

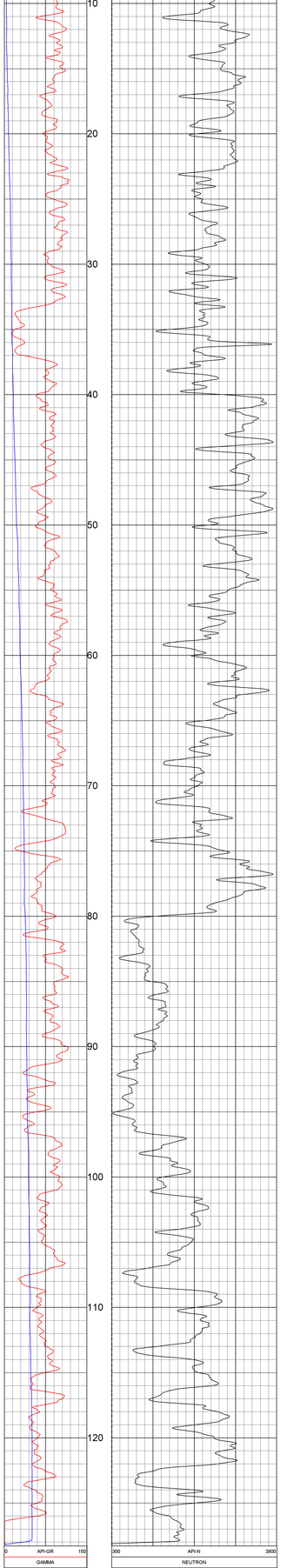
CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
15.02	15.02	0.00	0.00	0.0	87.0	0.7	87.0
16.00	16.00	0.00	0.01	0.0	88.4	0.8	90.4
17.00	17.00	0.00	0.03	0.0	87.8	0.9	85.1
18.00	18.00	0.00	0.05	0.0	88.2	1.2	92.0
19.00	19.00	-0.00	0.07	0.1	90.1	1.3	89.5
20.00	20.00	-0.00	0.10	0.1	91.5	1.5	92.8
21.00	21.00	-0.01	0.12	0.1	93.2	1.6	97.0
22.00	22.00	-0.01	0.15	0.1	93.8	1.4	78.0
23.00	23.00	-0.01	0.17	0.2	93.8	1.8	79.0
24.00	24.00	-0.01	0.20	0.2	92.9	1.8	92.5
25.00	25.00	-0.01	0.23	0.2	91.6	1.9	77.6
26.00	26.00	0.00	0.26	0.3	89.6	2.0	76.7
27.00	27.00	0.01	0.30	0.3	87.5	2.4	71.8
28.00	27.99	0.03	0.34	0.3	85.6	2.5	69.8
29.00	28.99	0.04	0.38	0.4	83.9	2.6	69.8
30.00	29.99	0.06	0.42	0.4	82.5	2.4	71.3
31.00	30.99	0.07	0.47	0.5	81.6	2.6	76.5
32.00	31.99	0.08	0.51	0.5	80.9	2.9	68.9
33.00	32.99	0.10	0.56	0.6	80.3	3.0	74.9
34.00	33.99	0.11	0.60	0.6	80.0	2.6	75.8
35.00	34.99	0.12	0.65	0.7	79.7	2.7	77.2
36.00	35.99	0.13	0.69	0.7	79.3	2.9	73.0
37.00	36.98	0.14	0.74	0.8	79.0	3.0	70.9
38.00	37.98	0.16	0.79	0.8	78.6	2.8	74.8
39.00	38.98	0.18	0.84	0.9	78.2	2.7	72.7
40.00	39.98	0.19	0.89	0.9	77.7	3.1	68.1
41.00	40.98	0.21	0.94	1.0	77.3	3.4	71.5
42.00	41.98	0.23	0.99	1.0	76.9	3.4	70.0
43.00	42.98	0.25	1.05	1.1	76.6	3.5	72.2
44.00	43.97	0.27	1.11	1.1	76.5	3.8	70.5
45.00	44.97	0.28	1.18	1.2	76.5	4.1	73.4
46.00	45.97	0.30	1.25	1.3	76.4	4.1	78.6
47.00	46.97	0.32	1.32	1.4	76.6	4.4	76.6
48.00	47.96	0.33	1.40	1.4	76.9	4.3	81.0
49.00	48.96	0.33	1.48	1.5	77.2	4.4	83.2
50.00	49.96	0.34	1.56	1.6	77.5	4.5	78.2
51.00	50.95	0.35	1.63	1.7	77.8	4.7	88.9
52.00	51.95	0.36	1.71	1.7	78.1	4.9	102.1
53.00	52.95	0.37	1.80	1.8	78.5	5.0	85.4
54.00	53.94	0.37	1.88	1.9	78.8	4.9	84.2
55.00	54.94	0.37	1.97	2.0	79.3	5.3	89.0
56.00	55.93	0.38	2.07	2.1	79.6	5.6	90.1
57.00	56.93	0.38	2.17	2.2	80.0	5.8	88.9
58.00	57.92	0.39	2.27	2.3	80.3	5.8	88.6
59.00	58.92	0.39	2.37	2.4	80.6	5.9	89.8
60.00	59.91	0.39	2.47	2.5	81.0	5.9	90.6
61.00	60.91	0.40	2.58	2.6	81.2	6.1	87.5
62.00	61.90	0.40	2.69	2.7	81.5	6.3	89.8
63.00	62.90	0.41	2.79	2.8	81.7	6.2	85.3
64.00	63.89	0.41	2.90	2.9	82.0	6.4	94.3
65.00	64.88	0.42	3.01	3.0	82.1	6.3	86.2
66.00	65.88	0.42	3.12	3.2	82.3	6.2	84.6
67.00	66.87	0.43	3.23	3.3	82.5	6.2	91.2
68.00	67.87	0.43	3.34	3.4	82.7	6.5	85.3
69.00	68.86	0.43	3.46	3.5	82.9	6.8	90.2
70.00	69.85	0.44	3.57	3.6	83.0	6.7	85.1
71.00	70.85	0.45	3.69	3.7	83.0	6.8	80.3
72.00	71.84	0.46	3.81	3.8	83.1	7.4	81.0
73.00	72.83	0.47	3.94	4.0	83.1	7.5	93.0
74.00	73.82	0.48	4.07	4.1	83.3	7.4	87.5
75.00	74.81	0.48	4.19	4.2	83.4	7.4	79.8
76.00	75.81	0.49	4.32	4.3	83.5	7.1	96.1
77.00	76.80	0.51	4.45	4.5	83.5	7.7	88.8
78.00	77.79	0.51	4.58	4.6	83.6	7.5	86.0
79.00	78.78	0.52	4.72	4.7	83.7	7.2	87.5
80.00	79.77	0.53	4.84	4.9	83.8	7.3	92.0
81.00	80.76	0.53	4.97	5.0	83.9	7.3	84.8
82.00	81.75	0.55	5.09	5.1	83.9	7.3	85.5
83.00	82.75	0.56	5.23	5.3	83.9	7.8	83.0
84.00	83.74	0.58	5.36	5.4	83.9	8.1	81.5
85.00	84.73	0.59	5.50	5.5	83.9	8.2	86.1
86.00	85.72	0.60	5.65	5.7	83.9	8.2	86.3
87.00	86.71	0.61	5.79	5.8	84.0	8.2	85.7
88.00	87.70	0.62	5.93	6.0	84.1	8.1	86.9
89.00	88.69	0.62	6.07	6.1	84.1	7.8	86.6
90.00	89.68	0.63	6.21	6.2	84.2	8.0	87.1
91.00	90.67	0.64	6.35	6.4	84.3	8.0	88.6
92.00	91.66	0.64	6.49	6.5	84.3	8.0	88.2
93.00	92.65	0.65	6.63	6.7	84.4	8.2	85.2
94.00	93.64	0.66	6.77	6.8	84.4	8.7	86.1
95.00	94.63	0.67	6.92	6.9	84.4	8.9	82.1
96.00	95.61	0.69	7.07	7.1	84.4	8.7	84.3
97.00	96.60	0.70	7.22	7.3	84.4	9.0	84.0
98.00	97.59	0.72	7.37	7.4	84.4	8.9	88.4
99.00	98.58	0.73	7.53	7.6	84.5	9.0	85.1
100.00	99.57	0.74	7.68	7.7	84.5	8.8	86.3
101.00	100.55	0.75	7.83	7.9	84.5	8.5	83.4
102.00	101.54	0.76	7.98	8.0	84.6	8.7	82.4
103.00	102.53	0.77	8.13	8.2	84.6	8.4	86.9
104.00	103.52	0.78	8.28	8.3	84.6	8.9	84.3
105.00	104.51	0.80	8.43	8.5	84.6	8.8	84.6
106.00	105.50	0.81	8.58	8.6	84.6	9.2	84.5
107.00	106.48	0.83	8.75	8.8	84.6	9.2	85.1
108.00	107.47	0.84	8.91	8.9	84.6	9.2	83.3
109.00	108.46	0.85	9.07	9.1	84.6	9.6	88.6
110.00	109.44	0.87	9.24	9.3	84.6	10.0	84.7
111.00	110.43	0.89	9.41	9.4	84.6	9.8	82.1
112.00	111.41	0.90	9.58	9.6	84.6	9.8	86.0
113.00	112.40	0.91	9.75	9.8	84.6	9.9	85.7
114.00	113.38	0.93	9.92	10.0	84.7	10.0	85.6
115.00	114.37	0.94	10.09	10.1	84.7	9.9	86.4
116.00	115.35	0.95	10.26	10.3	84.7	9.5	90.3
117.00	116.34	0.96	10.42	10.5	84.7	9.9	83.5
118.00	117.33	0.98	10.60	10.6	84.7	10.0	85.1
119.00	118.31	0.99	10.77	10.8	84.7	10.0	84.2
120.00	119.30	1.01	10.94	11.0	84.7	10.1	87.8
121.00	120.28	1.02	11.12	11.2	84.7	10.2	84.5
122.00	121.26	1.04	11.29	11.3	84.7	10.1	85.5
123.00	122.25	1.05	11.47	11.5	84.7	10.5	84.1
124.00	123.23	1.07	11.64	11.7	84.7	10.3	84.6
125.00	124.22	1.09	11.82	11.9	84.8	10.2	85.6
126.00	125.20	1.10	12.00	12.0	84.8	10.2	84.7
127.00	126.15	1.12	12.17	12.2	84.8	10.3	85.4
127.00	126.15	1.12	12.17	12.2	84.8	10.3	85.4



GAMMA NEUTRON TR 1:100 CM11-20 08/27/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR 0 08/27/2012		VERSION = 3.64kF



GAMMA NEUTRON TR 1:100 CM11-20 08/27/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.00	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR 0 08/27/2012		VERSION = 3.64kF

TOOL CALIBRATION CM11-20 08/27/12 12:47
TOOL 9058A TM VERSION 3
SERIAL NUMBER 2631

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	May15,12	10:05:16	GAMMA	0.000	[API-GR]	3.000	[CPS]
	May15,12	10:05:16	GAMMA	545.000	[API-GR]	560.000	[CPS]
2	Jan19,12	10:47:24	TEMP	3.500	[DEG_F]	330443.000	[CPS]
	Jan19,12	10:47:24	TEMP	51.000	[DEG_F]	396853.000	[CPS]
3	May15,12	10:19:19	NEUTRC	Default	[CPS]	Default	[CPS]
	May15,12	10:19:19	NEUTRC	271.000	[API-N]	94.000	[CPS]
4	May16,11	09:09:18	PORONEI	100.000	[PERCENT]	35.000	[CPS]

Century WIRELINE SERVICES

GAMMA-DENSITY (CPS)
THROUGH RODS
CM11-21

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-21
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA
LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A
PERMANENT DATUM	:GL
LOG MEASURED FROM	:GL
DRL MEASURED FROM	:GL
DATE	:09/04/12
DEPTH DRILLER	:65.00
BIT SIZE	:120.65
LOG TOP	:0.00
LOG BOTTOM	:59.00
CASING LOGGER	:24.00
CASING DRILLER	:24.00
CASING TYPE	:SURFACE
BOREHOLE FLUID	:WATER
RM TEMPERATURE	:N/A
MUD RES	:N/A
MUD WEIGHT	:1.00
WITNESSED BY	:NORWEST
RECORDED BY	:A.SPASKYY
REMARKS 1	:NO OPEN HOLE RUNS
REMARKS 2	:
ELEVATION KB	:N/A
ELEVATION DF	:N/A
ELEVATION GL	:N/A
RIG NUMBER	:GED
LOGGER TD	:59.00
ARRIVAL TIME	:19:30
DEPARTURE TIME	:05:00
CIRC STOPPED	:N/A

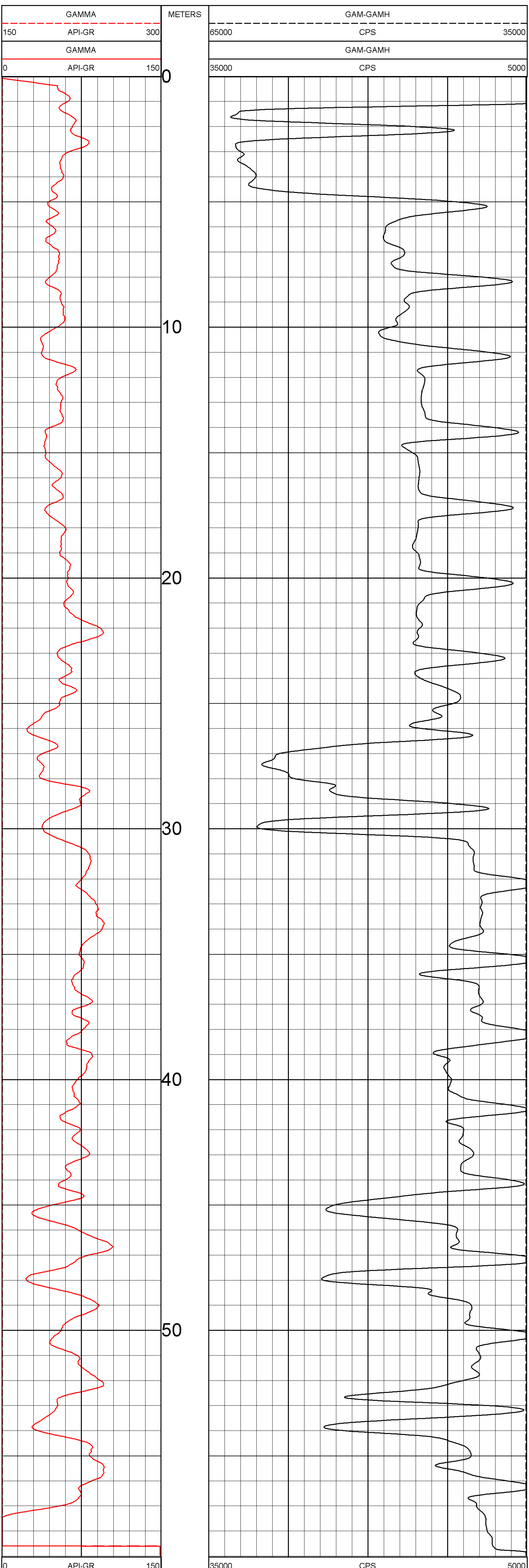
OTHER SERVICES:
NEU-TR

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DENSITY THROUGH RODS 1:100 CM11-21 09/04/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-TR.0 09/03/2012 VERSION = 3.64KF



DENSITY THROUGH RODS 1:100 CM11-21 09/04/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-TR.0 09/03/2012 VERSION = 3.64KF

TOOL CALIBRATION CM11-21 09/04/12 03:48
TOOL 9068A TM VERSION 1
SERIAL NUMBER 643

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug26,12	07:52:32	GAMMA	Default	[CPS]	Default	[CPS]
	Aug26,12	07:52:32	GAMMA	545.000	[API-GR]	195.000	[CPS]

Century WIRELINE SERVICES

GAMMA - NEUTRON THROUGH RODS CM11-21

COMPANY	CROWN MOUNTAIN EXPLORATION
WELL	CM11-21
FIELD	N/A
COUNTRY	CANADA
PROVINCE	ALBERTA
LSD	N/A
SECTION	N/A
TOWNSHIP	N/A
RANGE	N/A
LICENSE NO.	N/A
UNIQUE WELL ID.	N/A

OTHER SERVICES:
DEN-TR

PERMANENT DATUM	GL	ELEVATION KB	N/A
LOG MEASURED FROM	GL	ELEVATION DF	N/A
DRL MEASURED FROM	GL	ELEVATION GL	N/A

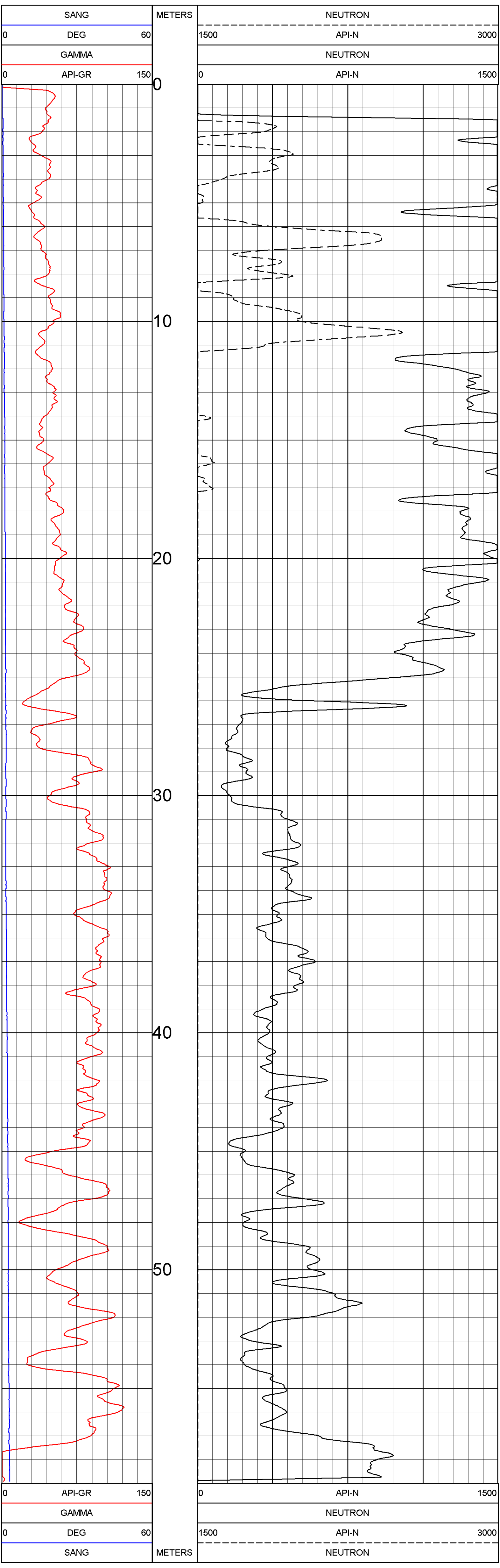
DATE	09/04/12	RIG NUMBER	GED
DEPTH DRILLER	65.00	LOGGER TD	59.00
BIT SIZE	120.65	ARRIVAL TIME	19:30
LOG TOP	0.00	DEPARTURE TIME	05:00
LOG BOTTOM	58.96	CIRC STOPPED	N/A
CASING LOGGER	24.00		
CASING DRILLER	24.00		
CASING TYPE	SURFACE		
BOREHOLE FLUID	WATER		
RM TEMPERATURE	N/A		
MUD RES	N/A		
MUD WEIGHT	1.00		
WITNESSED BY	NORWEST		
RECORDED BY	A.SPASKYY		
REMARKS 1	NO OPEN HOLE RUNS		
REMARKS 2			

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

NEUTRON THROUGH RODS 1:100 CM11-21 09/04/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/26/2012 VERSION = 3.64KF



NEUTRON THROUGH RODS 1:100 CM11-21 09/04/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/26/2012 VERSION = 3.64KF

TOOL CALIBRATION CM11-21 09/04/12 04:08
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	POROSIT	Default	[CPS]		
3	May12,08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12,08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04,09	10:40:49	NEUTRON	0.000	[API-N]	1.000	[CPS]
	Dec04,09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-22

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-22
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:08/24/12	RIG NUMBER	:GED
DEPTH DRILLER	:166.00	LOGGER TD	:166.00
BIT SIZE	:120.65	ARRIVAL TIME	:15:00
LOG TOP	:0.00	DEPARTURE TIME	:17:30
LOG BOTTOM	:165.79	CIRC STOPPED	:N/A
CASING LOGGER	:12.50		
CASING DRILLER	:12.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

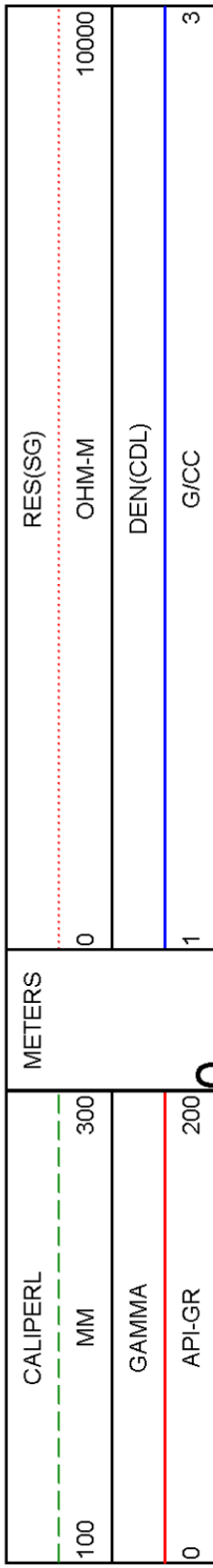
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

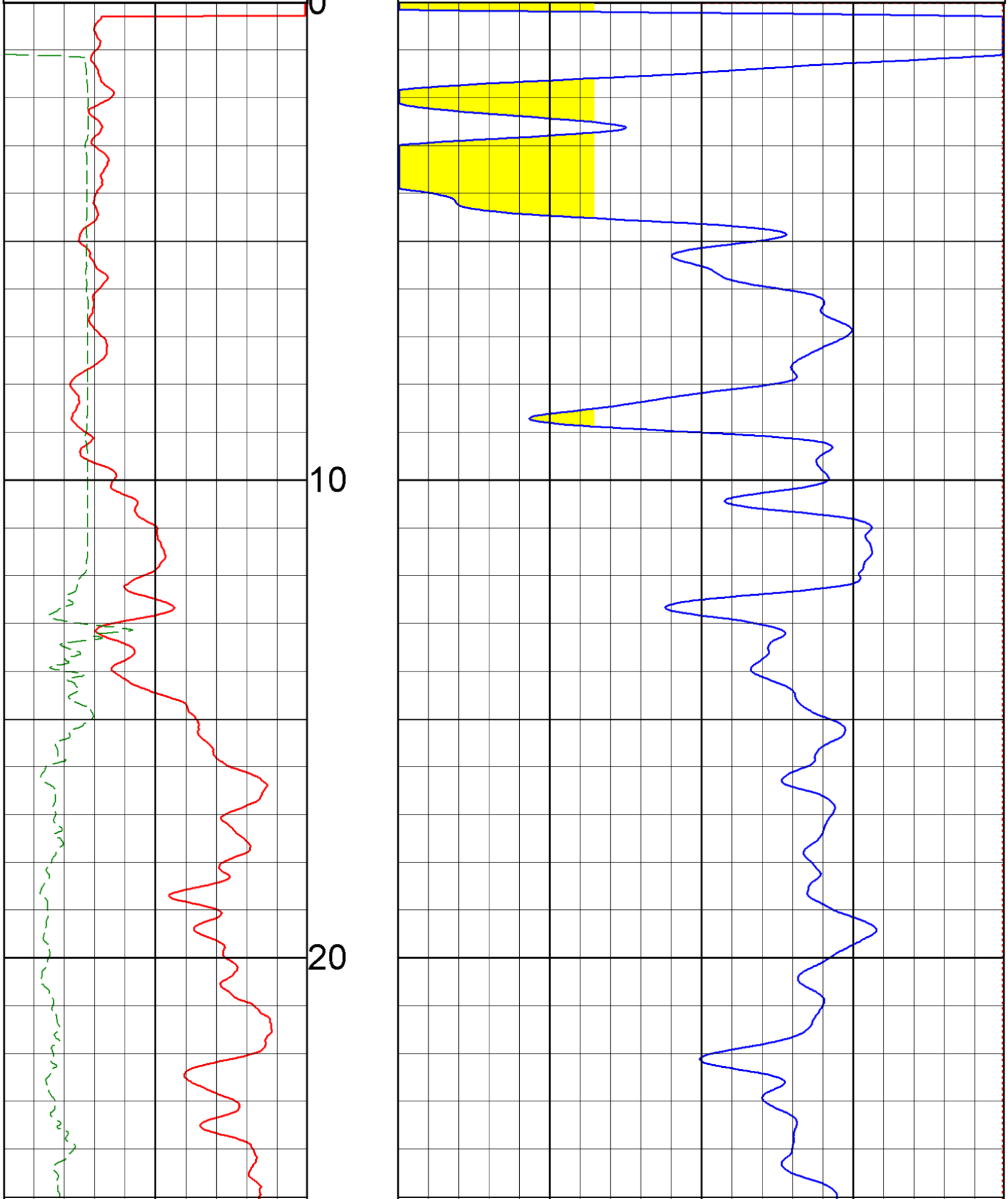
DENSITY 1:100 CM11-22 08/24/12

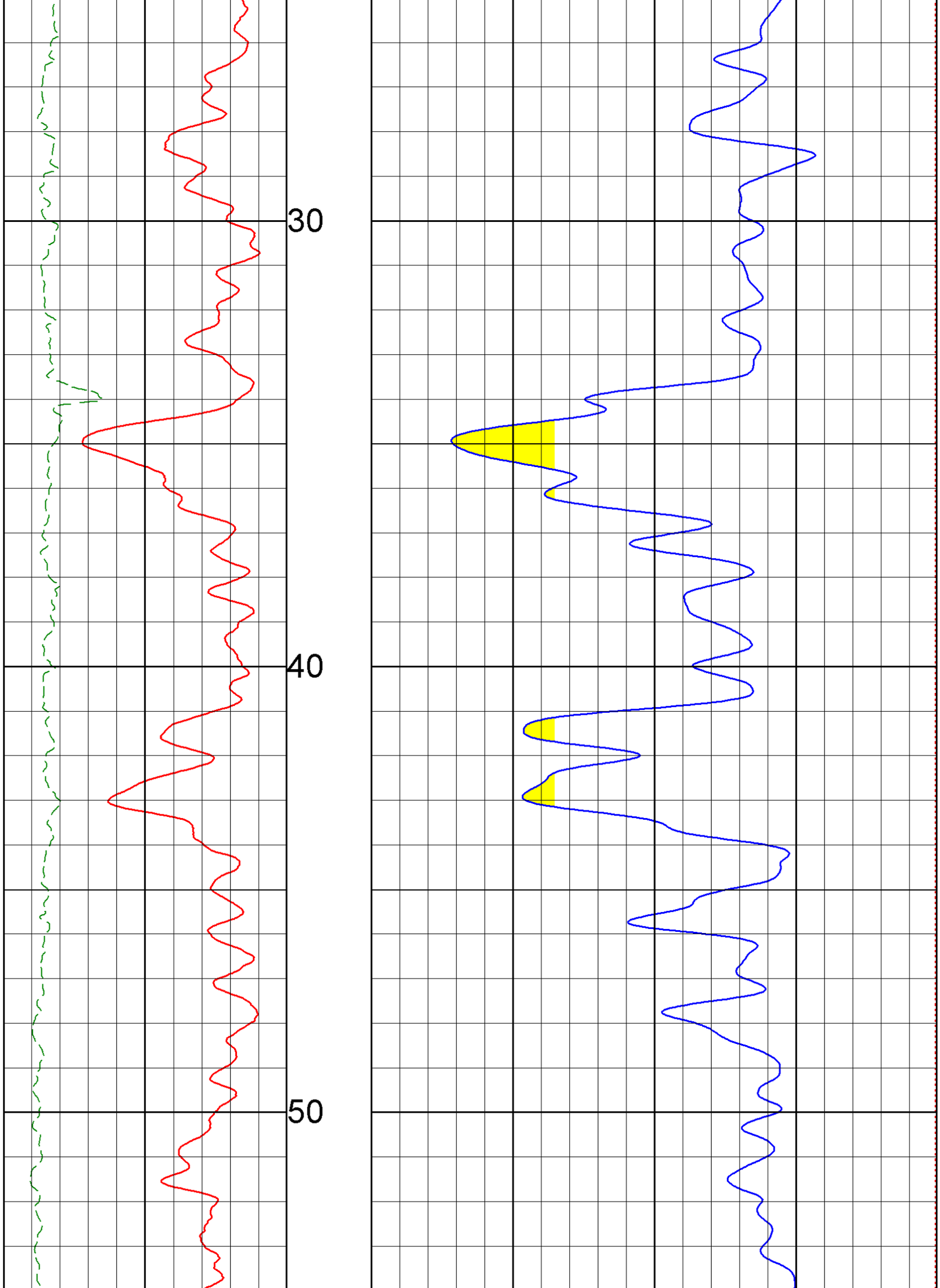
LOG PARAMETERS

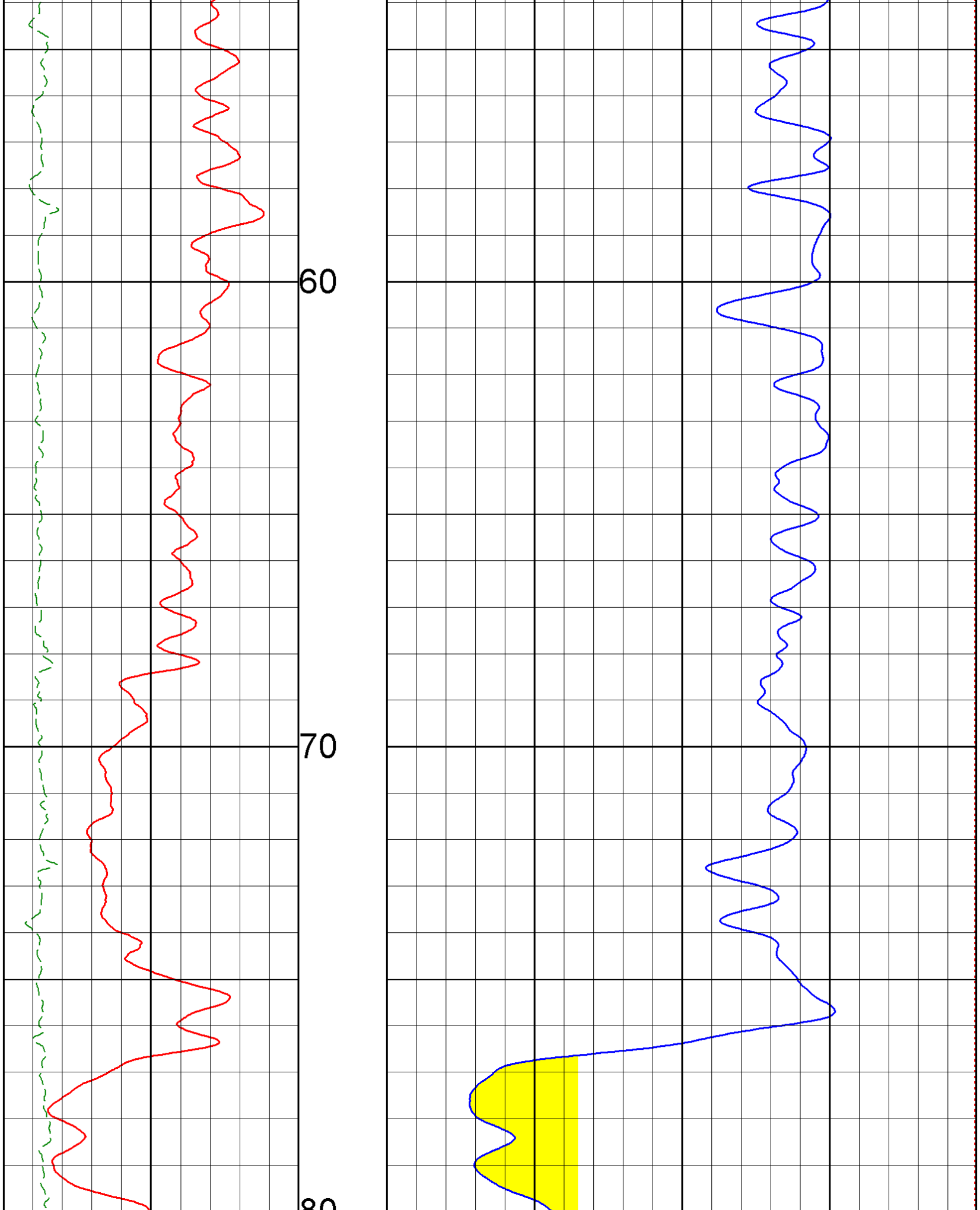
MATRIX DENSITY :	2.65	NEUTRON MATRIX :	SANDSTONE
MAGNETIC DECL :	15.3	ELECT. CUTOFF	: 99999
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-RES.0 08/21/2012		

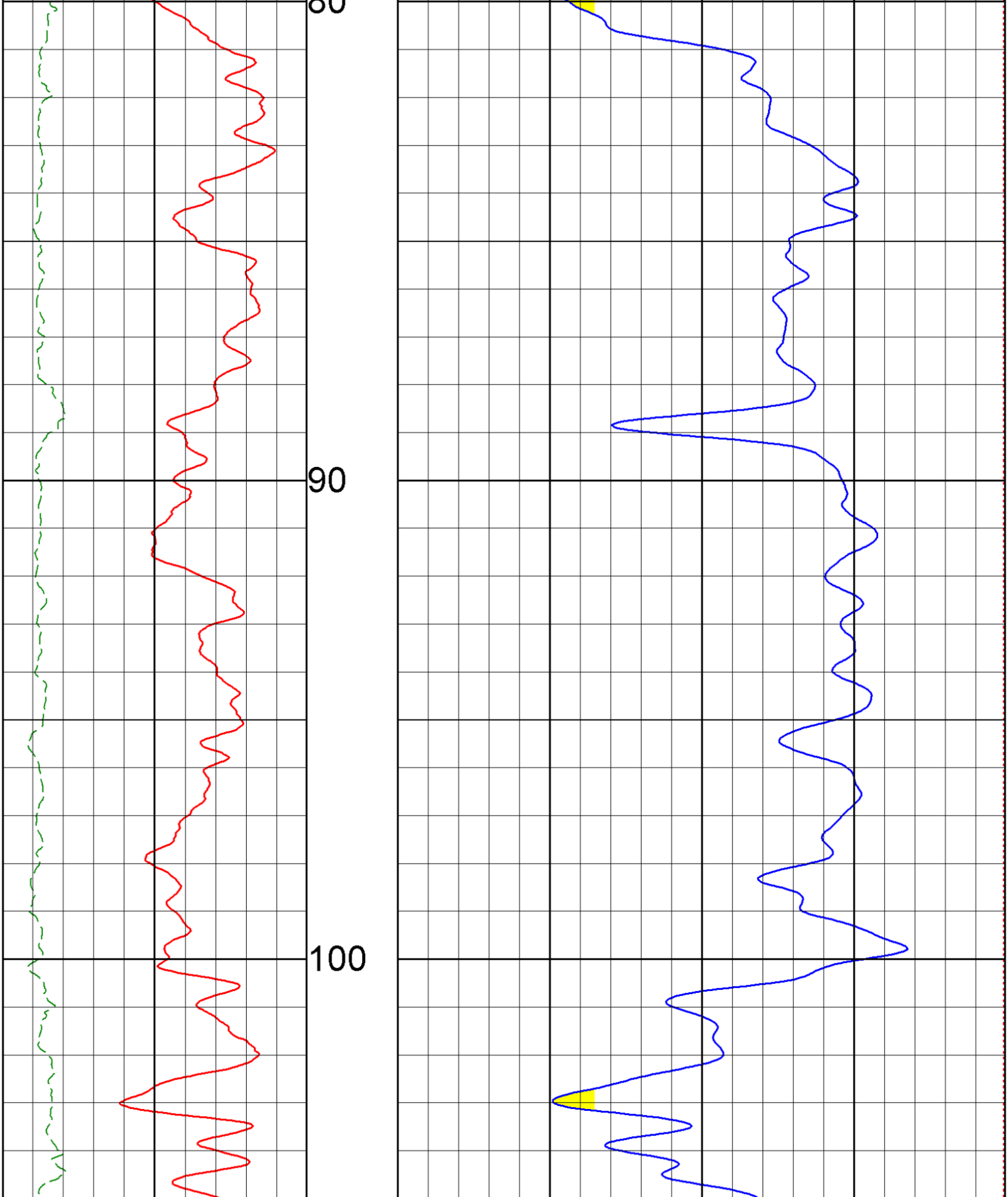
MATRIX DELTA T :	177
BIT SIZE	: 120.65
VERSION	= 3.64KF

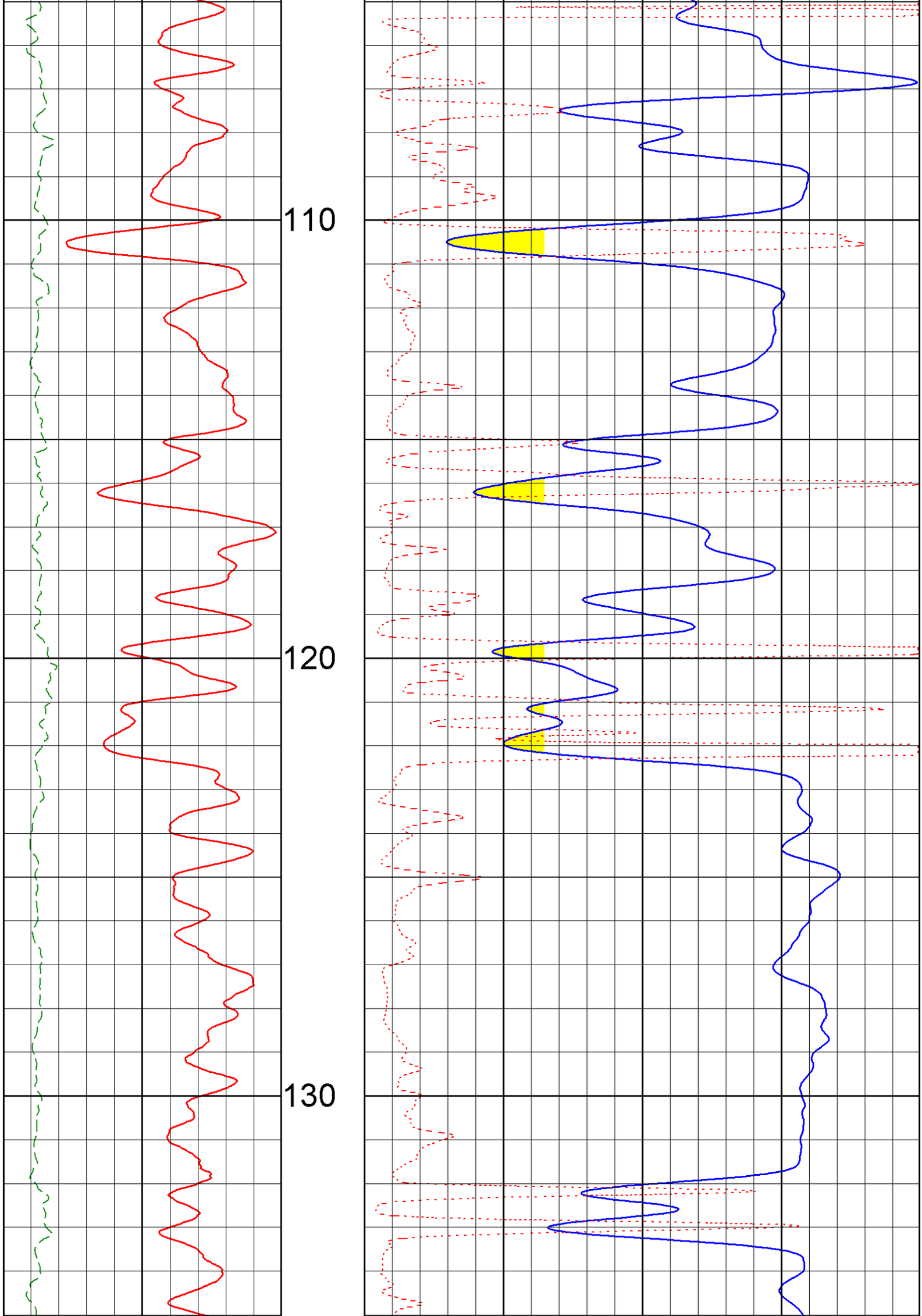


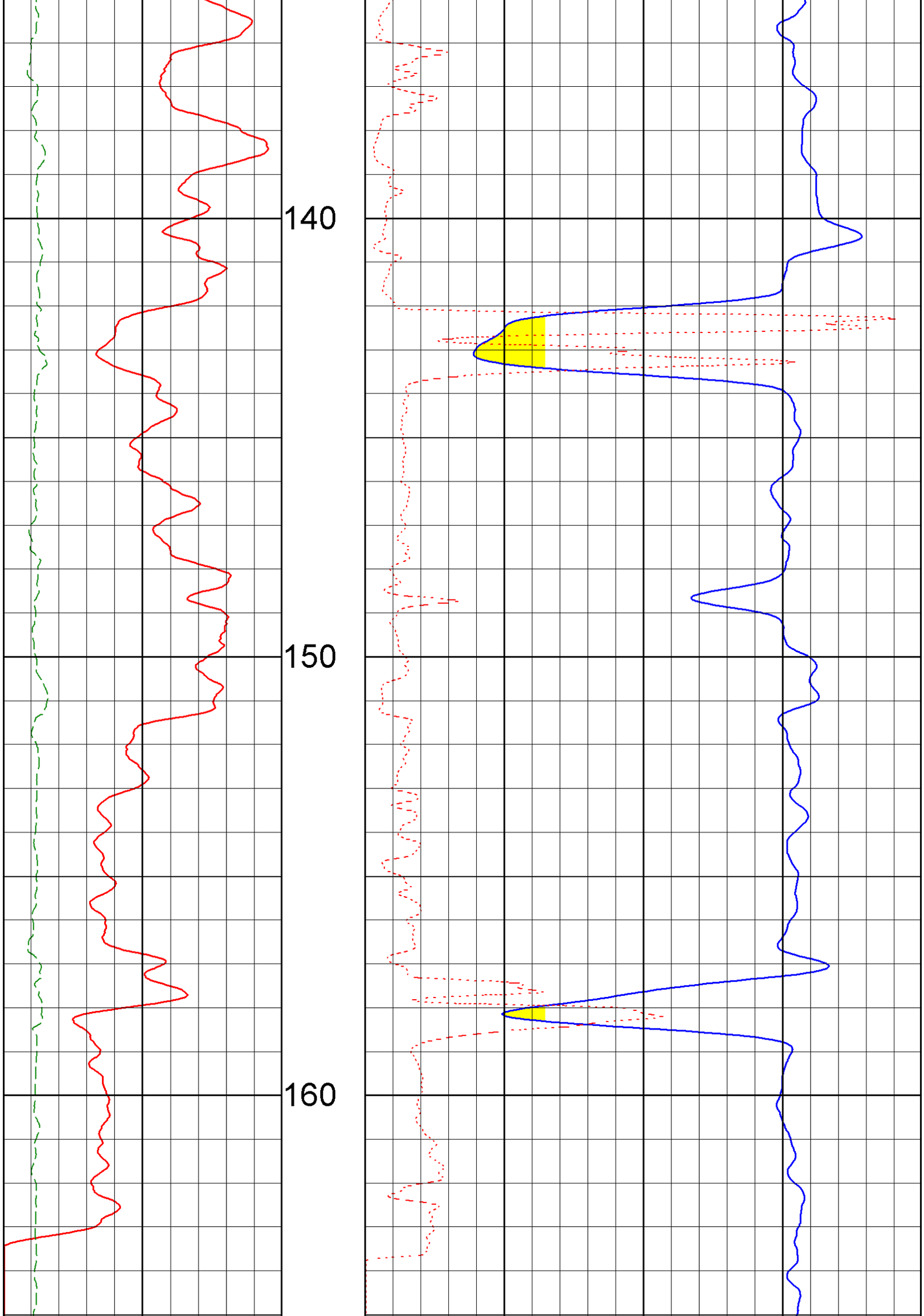

0
10
20

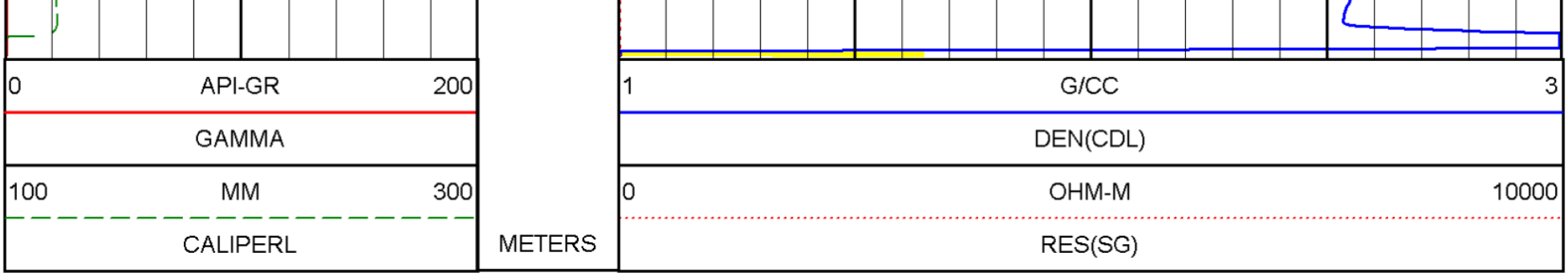

30
40
50


60
70
80


80
90
100


110
120
130


140
150
160



DENSITY 1:100 CM11-22 08/24/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-22 08/24/12 16:52
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

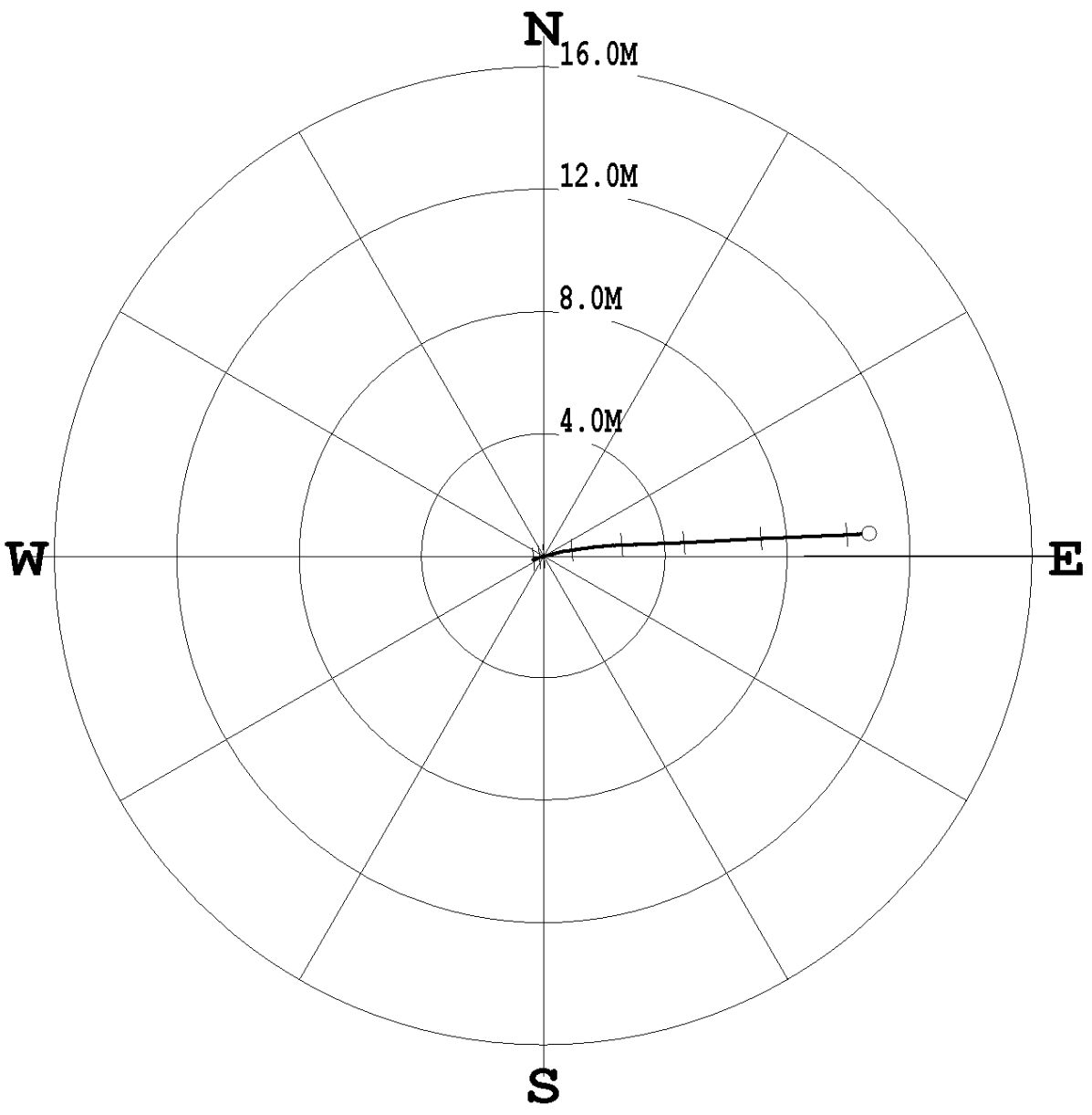
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-22
DATE OF LOG: 08/24/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 2 M/CM
TRUE DEPTH: 165.37 M
AZIMUTH: 86.1
DISTANCE: 10.7 M
+ = 20 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM11-22
FIELD OFFICE : CENTURY GEO DATE OF LOG : 08/24/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 15.300 DEPTH UNITS : METERS
LOG: CM11-22_08-24-12_16-16_9055A_.02_15.00_165.97_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
15.02	15.02	-0.00	-0.00	0.0	240.3	1.8	240.3
16.00	16.00	-0.01	-0.03	0.0	255.6	1.7	253.5
17.00	17.00	-0.01	-0.06	0.1	255.3	1.9	255.6
18.00	18.00	-0.02	-0.09	0.1	253.8	2.1	240.5
19.00	19.00	-0.03	-0.11	0.1	252.9	1.8	252.2
20.00	20.00	-0.04	-0.14	0.1	252.4	1.5	245.7
21.00	21.00	-0.05	-0.16	0.2	251.9	1.3	242.7
22.00	22.00	-0.06	-0.18	0.2	252.2	1.2	255.8
23.00	23.00	-0.07	-0.20	0.2	251.8	1.1	256.4
24.00	24.00	-0.07	-0.22	0.2	251.5	1.2	247.5
25.00	25.00	-0.08	-0.24	0.3	251.0	1.1	244.1
26.00	26.00	-0.09	-0.26	0.3	251.0	1.0	231.4
27.00	27.00	-0.09	-0.28	0.3	251.3	0.9	263.3
28.00	28.00	-0.10	-0.29	0.3	251.1	0.7	262.8
29.00	29.00	-0.10	-0.30	0.3	250.9	0.6	247.5
30.00	30.00	-0.11	-0.31	0.3	250.7	0.6	247.7
31.00	31.00	-0.11	-0.32	0.3	250.7	0.4	253.6
32.00	32.00	-0.11	-0.32	0.3	250.8	0.3	246.9
33.00	33.00	-0.11	-0.33	0.3	250.9	0.1	331.4
34.00	34.00	-0.11	-0.33	0.3	251.0	0.2	219.5
35.00	35.00	-0.11	-0.33	0.4	251.1	0.2	262.6
36.00	36.00	-0.11	-0.34	0.4	251.4	0.2	16.4
37.00	37.00	-0.11	-0.34	0.4	251.7	0.1	207.7
38.00	38.00	-0.11	-0.33	0.4	251.9	0.3	67.3
39.00	39.00	-0.11	-0.33	0.3	252.0	0.2	56.6
40.00	40.00	-0.11	-0.33	0.3	251.8	0.2	59.6
41.00	41.00	-0.11	-0.32	0.3	251.9	0.2	29.4
42.00	42.00	-0.10	-0.32	0.3	252.3	0.0	353.3
43.00	43.00	-0.10	-0.32	0.3	252.2	0.5	60.3
44.00	44.00	-0.10	-0.32	0.3	252.7	0.1	193.8
45.00	45.00	-0.10	-0.31	0.3	252.8	0.2	91.9
46.00	46.00	-0.09	-0.31	0.3	253.1	0.7	62.7
47.00	47.00	-0.09	-0.30	0.3	253.3	0.6	79.3
48.00	48.00	-0.08	-0.28	0.3	253.4	1.3	64.0
49.00	49.00	-0.08	-0.27	0.3	253.6	0.8	78.9
50.00	50.00	-0.07	-0.25	0.3	253.7	1.0	75.4
51.00	51.00	-0.07	-0.23	0.2	253.7	1.4	62.3
52.00	51.99	-0.06	-0.21	0.2	253.8	1.2	76.2
53.00	52.99	-0.05	-0.19	0.2	253.7	1.1	82.0
54.00	53.99	-0.05	-0.16	0.2	253.6	1.5	80.9
55.00	54.99	-0.04	-0.14	0.1	253.6	1.9	71.3
56.00	55.99	-0.03	-0.10	0.1	253.3	1.7	77.8
57.00	56.99	-0.02	-0.08	0.1	252.0	1.5	74.8
58.00	57.99	-0.02	-0.05	0.1	248.0	1.6	81.7
59.00	58.99	-0.01	-0.02	0.0	240.4	1.7	81.2
60.00	59.99	-0.01	0.00	0.0	144.7	1.8	83.6
61.00	60.99	0.00	0.03	0.0	88.6	1.8	72.7
62.00	61.99	0.01	0.07	0.1	80.3	2.1	73.8
63.00	62.99	0.02	0.10	0.1	78.6	1.8	76.9
64.00	63.99	0.03	0.14	0.1	77.4	2.1	76.0
65.00	64.99	0.04	0.17	0.2	76.7	2.1	60.8
66.00	65.99	0.05	0.21	0.2	76.8	2.4	71.3
67.00	66.99	0.06	0.25	0.3	76.9	2.8	82.2
68.00	67.99	0.07	0.30	0.3	76.6	2.9	68.8
69.00	68.98	0.08	0.34	0.4	76.6	2.6	82.3
70.00	69.98	0.10	0.39	0.4	76.3	2.8	73.6
71.00	70.98	0.11	0.44	0.4	76.3	2.6	82.9
72.00	71.98	0.12	0.49	0.5	76.1	3.1	63.5
73.00	72.98	0.13	0.54	0.6	76.0	3.2	71.0
74.00	73.98	0.14	0.59	0.6	76.2	3.2	77.9
75.00	74.98	0.15	0.64	0.7	76.5	2.9	82.8
76.00	75.98	0.16	0.69	0.7	76.8	3.3	75.3
77.00	76.97	0.17	0.75	0.8	77.1	3.3	83.5
78.00	77.97	0.18	0.81	0.8	77.4	3.3	88.1
79.00	78.97	0.19	0.86	0.9	77.8	3.5	78.6
80.00	79.97	0.20	0.92	0.9	78.1	3.4	84.3
81.00	80.97	0.20	0.98	1.0	78.4	3.8	87.6
82.00	81.96	0.21	1.05	1.1	78.4	3.9	78.4
83.00	82.96	0.22	1.11	1.1	78.7	4.0	81.7
84.00	83.96	0.23	1.18	1.2	78.9	4.1	79.4
85.00	84.96	0.24	1.26	1.3	79.0	4.3	83.4
86.00	85.95	0.26	1.33	1.4	79.1	4.0	86.7
87.00	86.95	0.27	1.41	1.4	79.3	4.6	83.5
88.00	87.95	0.28	1.49	1.5	79.4	4.7	82.3
89.00	88.94	0.29	1.57	1.6	79.7	4.8	86.5
90.00	89.94	0.30	1.66	1.7	79.8	4.8	78.7
91.00	90.94	0.31	1.74	1.8	79.9	4.9	80.7
92.00	91.93	0.32	1.82	1.9	80.1	4.9	90.4
93.00	92.93	0.32	1.91	1.9	80.4	5.2	86.3
94.00	93.93	0.33	2.00	2.0	80.6	5.2	85.6
95.00	94.92	0.34	2.09	2.1	80.8	5.2	85.0
96.00	95.92	0.35	2.18	2.2	81.0	5.2	82.6
97.00	96.91	0.35	2.27	2.3	81.2	5.2	90.5
98.00	97.91	0.35	2.36	2.4	81.6	5.2	89.9
99.00	98.90	0.36	2.46	2.5	81.7	5.2	68.6
100.00	99.90	0.37	2.55	2.6	81.8	5.1	88.0
101.00	100.90	0.37	2.64	2.7	82.1	5.4	86.5
102.00	101.89	0.37	2.73	2.8	82.2	5.6	91.7
103.00	102.89	0.37	2.83	2.9	82.5	5.6	95.5
104.00	103.88	0.38	2.93	3.0	82.7	5.7	83.1
105.00	104.88	0.38	3.02	3.0	82.9	5.1	92.1
106.00	105.87	0.38	3.11	3.1	83.0	5.5	84.1
107.00	106.87	0.39	3.21	3.2	83.1	5.3	94.4
108.00	107.86	0.39	3.31	3.3	83.3	6.0	85.0
109.00	108.86	0.39	3.41	3.4	83.4	5.8	84.6
110.00	109.85	0.40	3.51	3.5	83.5	6.0	90.7
111.00	110.85	0.40	3.62	3.6	83.7	5.8	90.8
112.00	111.84	0.41	3.72	3.7	83.8	6.3	84.2
113.00	112.84	0.41	3.82	3.8	83.9	5.8	87.7
114.00	113.83	0.41	3.92	3.9	84.0	5.9	87.5
115.00	114.83	0.42	4.02	4.0	84.1	6.3	84.9
116.00	115.82	0.42	4.13	4.1	84.2	6.1	87.8
117.00	116.82	0.43	4.23	4.3	84.2	6.0	88.1
118.00	117.81	0.43	4.34	4.4	84.3	6.3	88.2
119.00	118.80	0.44	4.45	4.5	84.4	6.6	86.9
120.00	119.80	0.44	4.56	4.6	84.5	6.5	88.6
121.00	120.79	0.44	4.67	4.7	84.6	6.9	88.4
122.00	121.78	0.45	4.79	4.8	84.6	6.5	91.1
123.00	122.78	0.46	4.90	4.9	84.7	6.6	82.7
124.00	123.77	0.46	5.02	5.0	84.7	6.6	84.6
125.00	124.76	0.47	5.14	5.2	84.7	6.8	90.7
126.00	125.76	0.48	5.26	5.3	84.8	6.7	89.8
127.00	126.75	0.48	5.38	5.4	84.9	7.2	89.0
128.00	127.74	0.49	5.51	5.5	84.9	7.5	84.2
129.00	128.73	0.50	5.63	5.7	85.0	7.0	86.5
130.00	129.72	0.51	5.76	5.8	85.0	7.2	86.0
131.00	130.72	0.51	5.88	5.9	85.0	7.7	86.7
132.00	131.71	0.52	6.01	6.0	85.1	7.3	86.2
133.00	132.70	0.53	6.14	6.2	85.1	7.1	91.5
134.00	133.69	0.53	6.27	6.3	85.2	7.5	85.9
135.00	134.68	0.54	6.40	6.4	85.2	7.5	85.1
136.00	135.67	0.55	6.53	6.5	85.2	7.3	87.9
137.00	136.67	0.55	6.65	6.7	85.3	7.4	87.2
138.00	137.66	0.56	6.79	6.8	85.3	7.7	81.5
139.00	138.65	0.57	6.92	6.9	85.3	7.9	87.2
140.00	139.64	0.57	7.06	7.1	85.4	7.9	87.0
141.00	140.63	0.58	7.19	7.2	85.4	7.9	88.3
142.00	141.62	0.58	7.33	7.4	85.4	7.9	86.0
143.00	142.61	0.59	7.47	7.5	85.5	7.9	88.9
144.00	143.60	0.59	7.60	7.6	85.6	7.9	84.8
145.00	144.59	0.60	7.74	7.8	85.6	7.9	83.3
146.00	145.58	0.61	7.87	7.9	85.6	7.9	88.0
147.00	146.57	0.61	8.01	8.0	85.6	7.9	88.9
148.00	147.56	0.62	8.15	8.2	85.6	8.4	86.4
149.00	148.55	0.63	8.30	8.3	85.7	8.4	87.0
150.00	149.54	0.63	8.44	8.5	85.7	8.3	86.9
151.00	150.53	0.64	8.58	8.6	85.7	7.8	92.7
152.00	151.52	0.64	8.73	8.8	85.8	8.3	87.8
153.00	152.51	0.65	8.87	8.9	85.8	8.0	87.4
154.00	153.50	0.66	9.01	9.0	85.8	8.1	89.7
155.00	154.49	0.66	9.15	9.2	85.9	8.1	81.5
156.00	155.48	0.68	9.29	9.3	85.8	8.1	88.2
157.00	156.47	0.68	9.43	9.5	85.9	7.9	93.8
158.00	157.46	0.68	9.57	9.6	85.9	7.9	87.1
159.00	158.45	0.69	9.71	9.7	86.0	7.8	96.9
160.00	159.44	0.69	9.84	9.9	86.0	7.7	85.1
161.00	160.43	0.71	9.98	10.0	85.9	7.9	84.3
162.00	161.42	0.71	10.12	10.1	86.0	7.7	88.8
163.00	162.41	0.72	10.25	10.3	86.0	7.6	85.4
164.00	163.41	0.72	10.39	10.4	86.0	7.9	86.2
165.00	164.40	0.73	10.52	10.5	86.0	7.7	91.9
165.98	165.33	0.73	10.65	10.7	86.1	7.7	88.2

COMPENSATED DENSITY
GAMMA - CALIPER
CM11-22B

Century WIRELINE SERVICES

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM11-22B
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

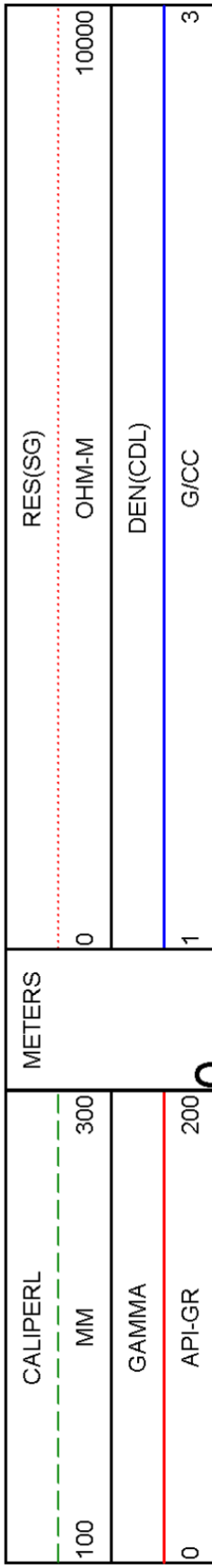
DATE	:09/06/12	RIG NUMBER	:GED
DEPTH DRILLER	:159.00	LOGGER TD	:156.70
BIT SIZE	:120.65	ARRIVAL TIME	:08:30
LOG TOP	:0.00	DEPARTURE TIME	:15:00
LOG BOTTOM	:156.51	CIRC STOPPED	:N/A
CASING LOGGER	:5.90		
CASING DRILLER	:6.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:AZIMUTH: 90 DEGREES DIP: 50 DEGREES		
REMARKS 2	:		

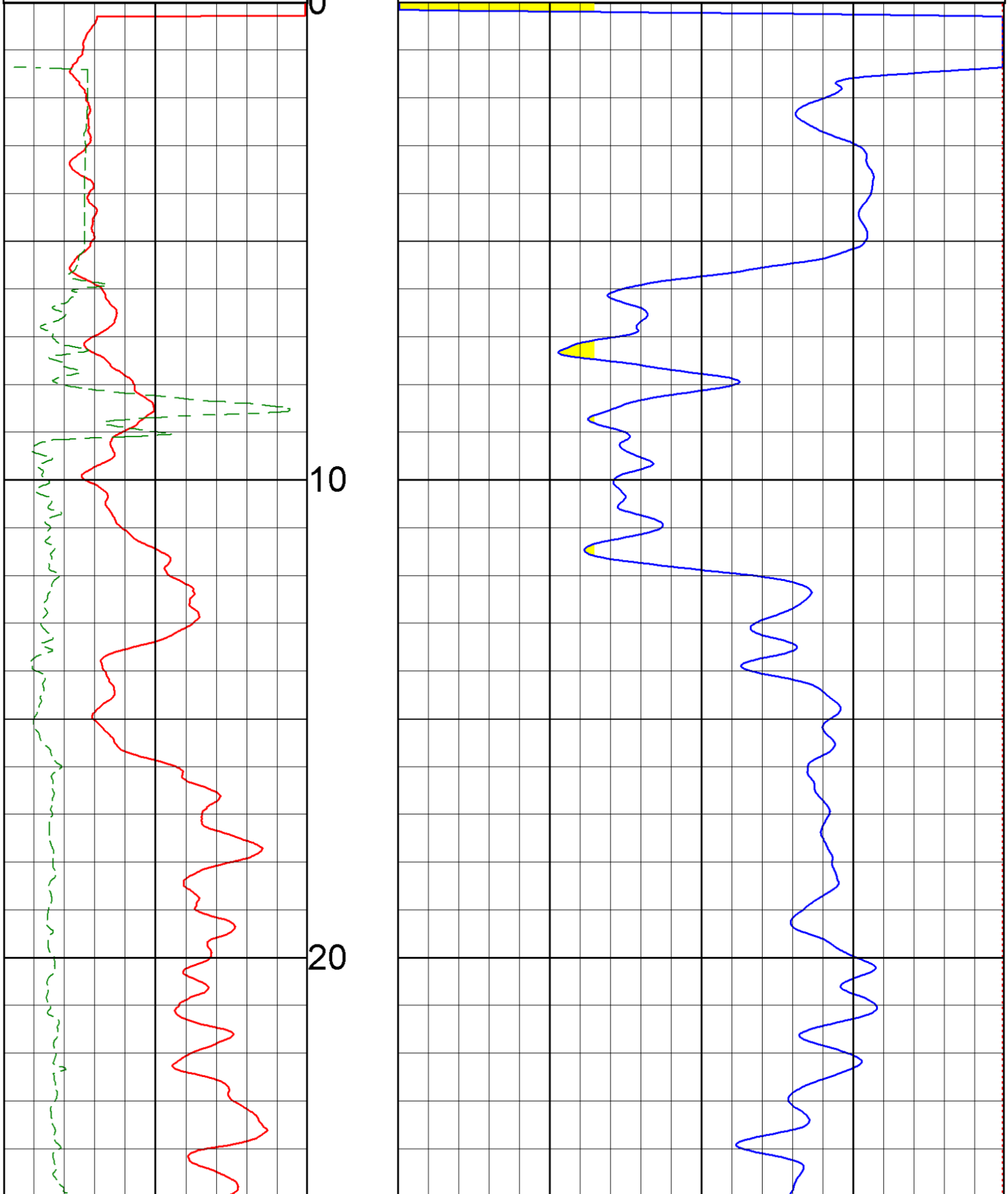
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DENSITY 1:100 CM11-22B 09/06/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF	

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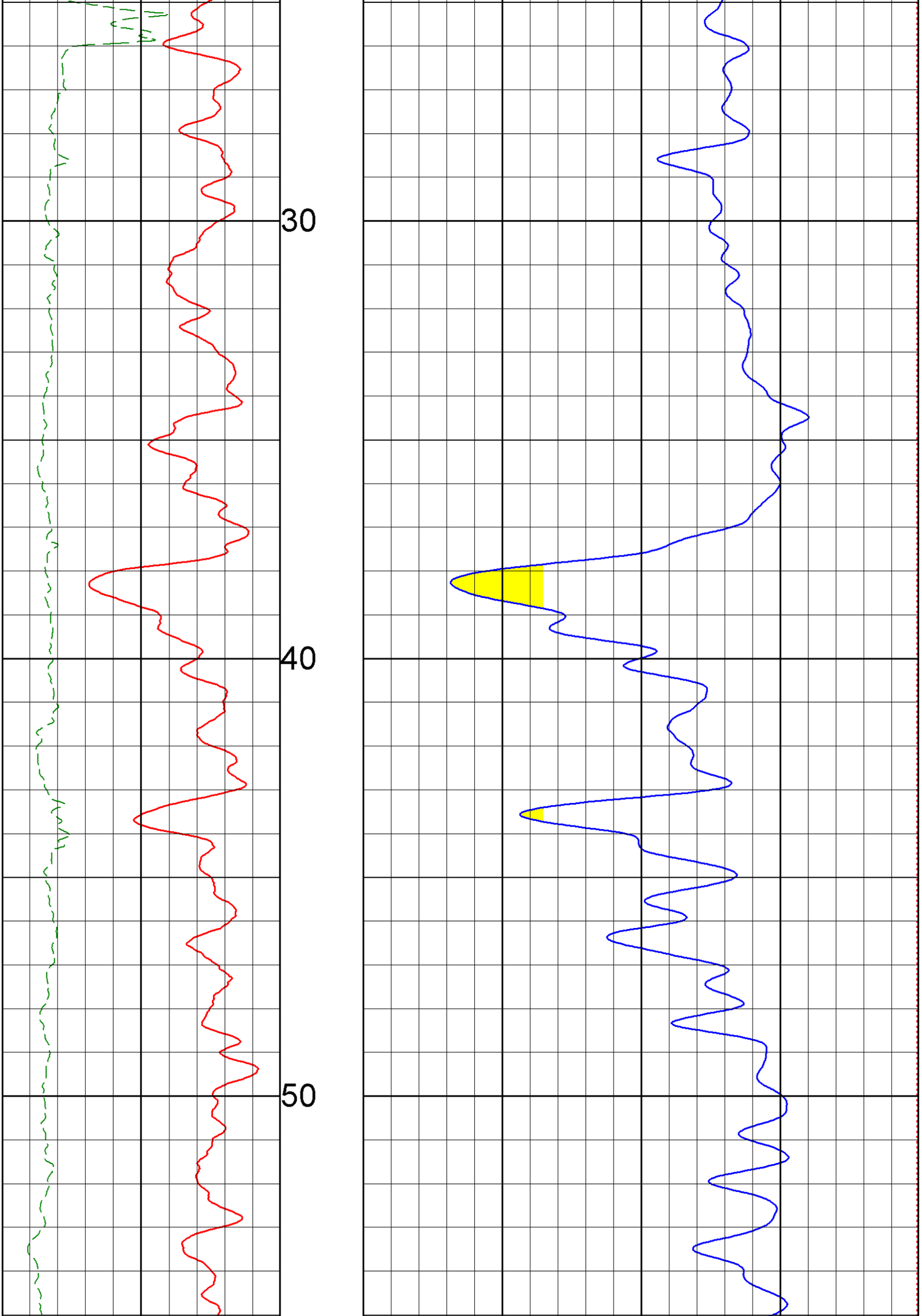
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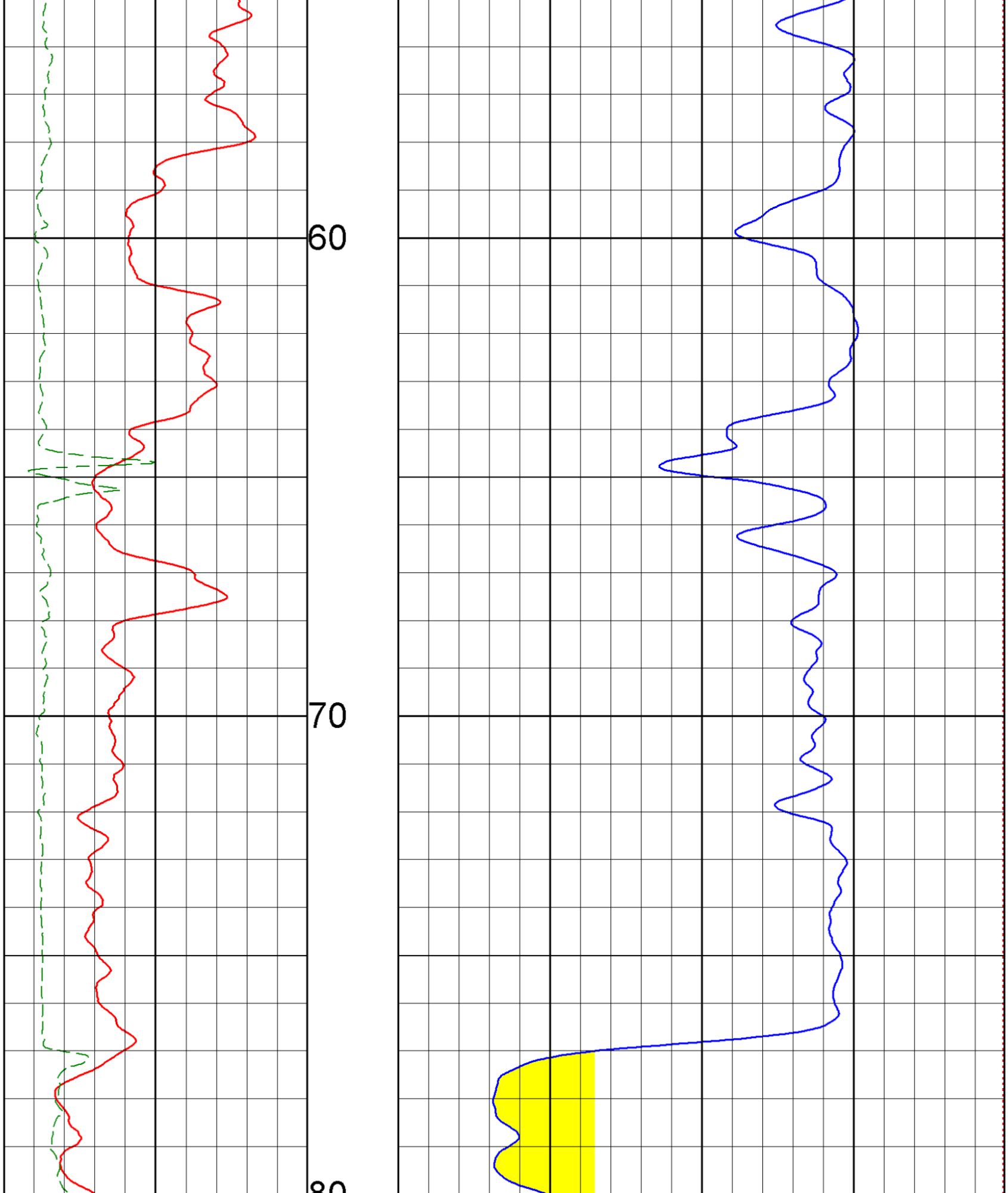
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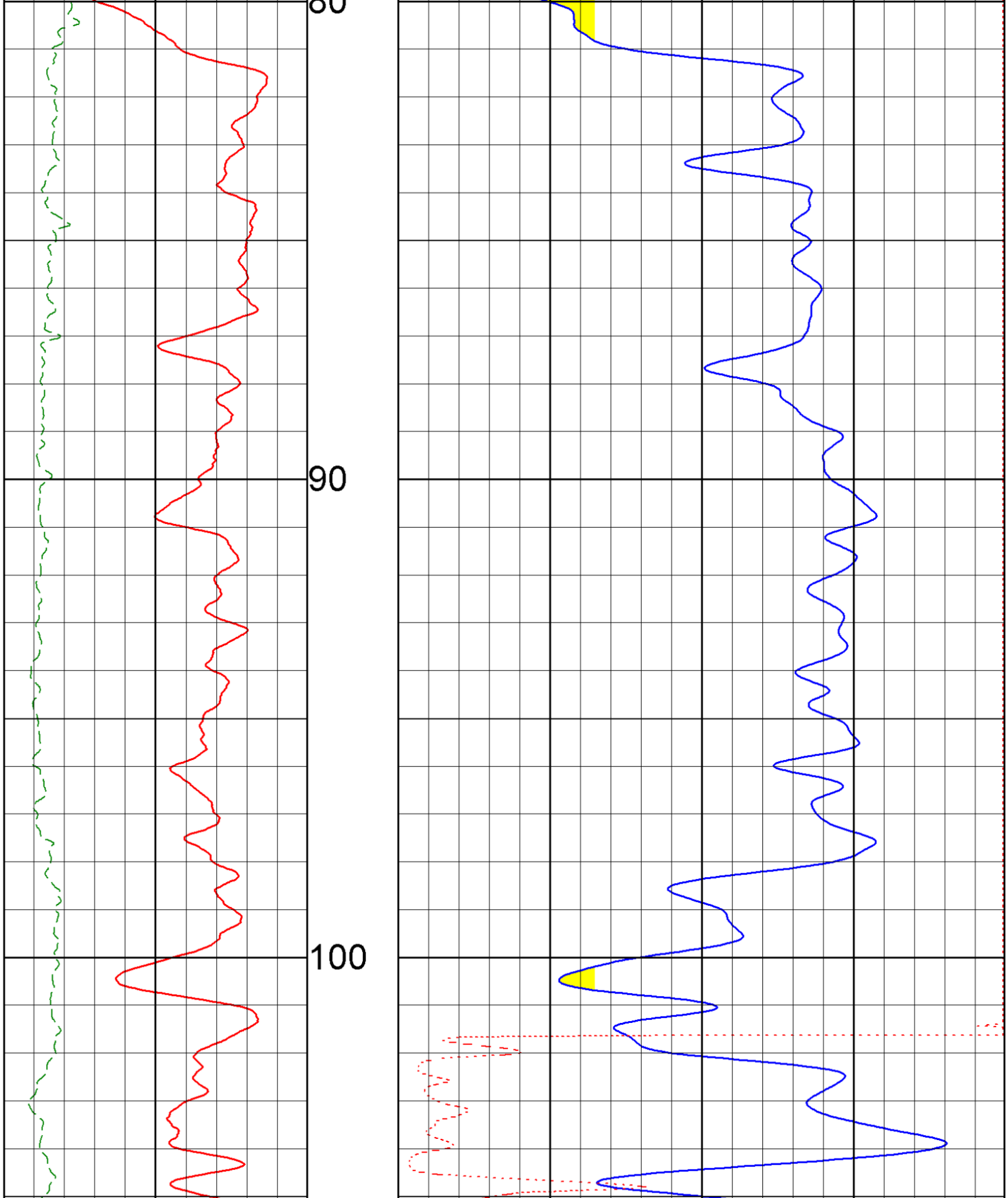
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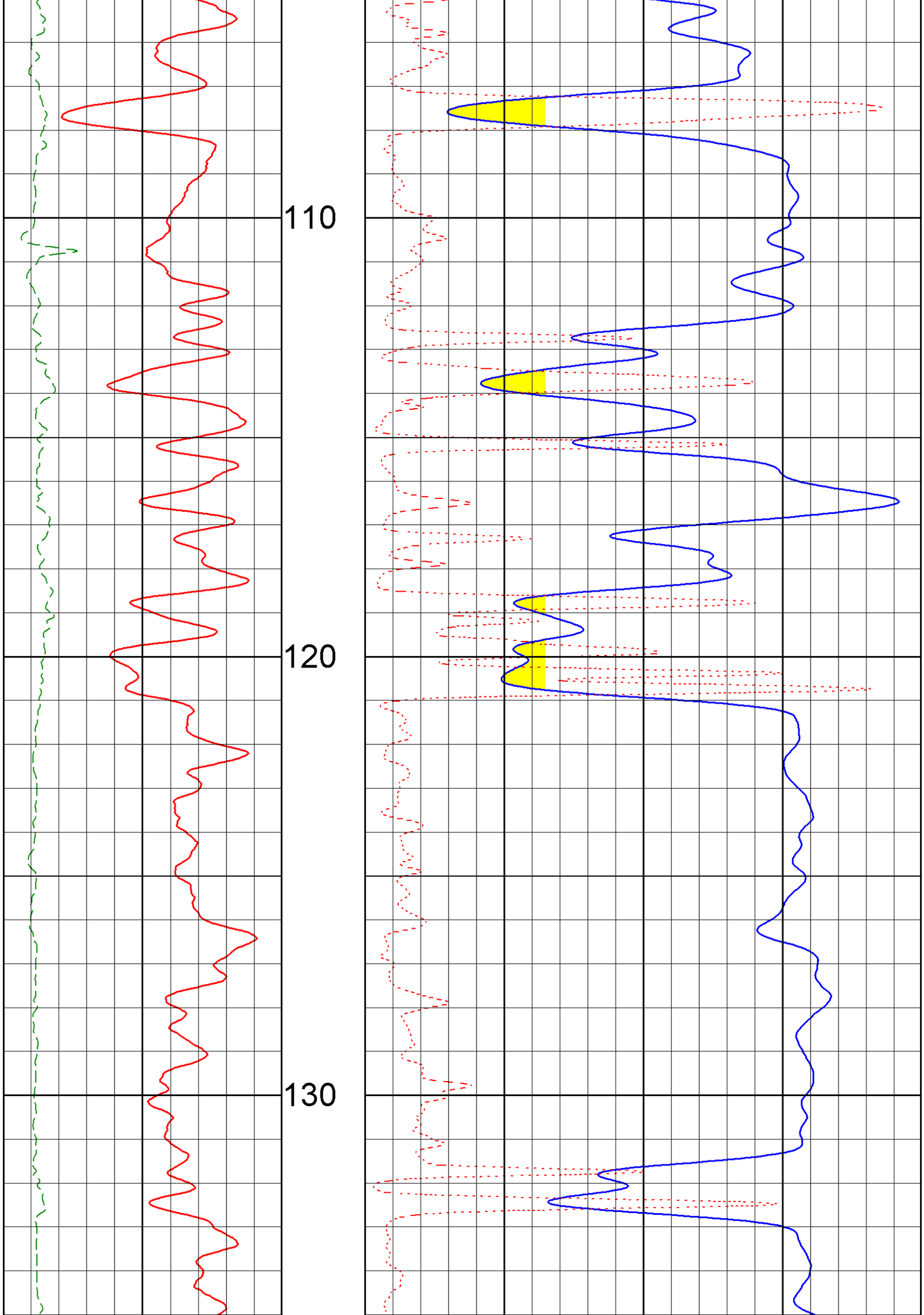
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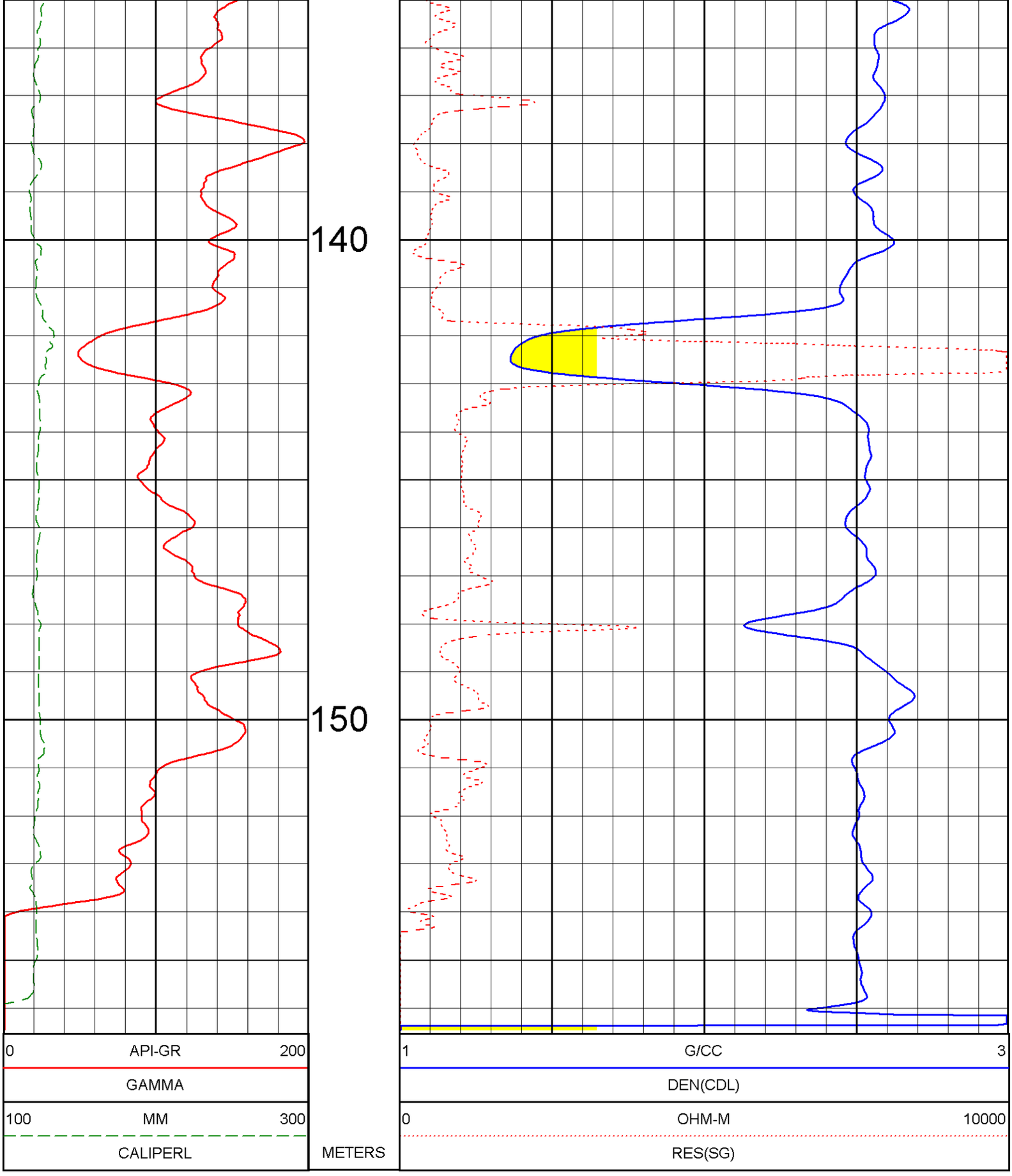


DENSITY 1:100 CM11-22B 09/06/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM11-22B 09/06/12 13:40
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

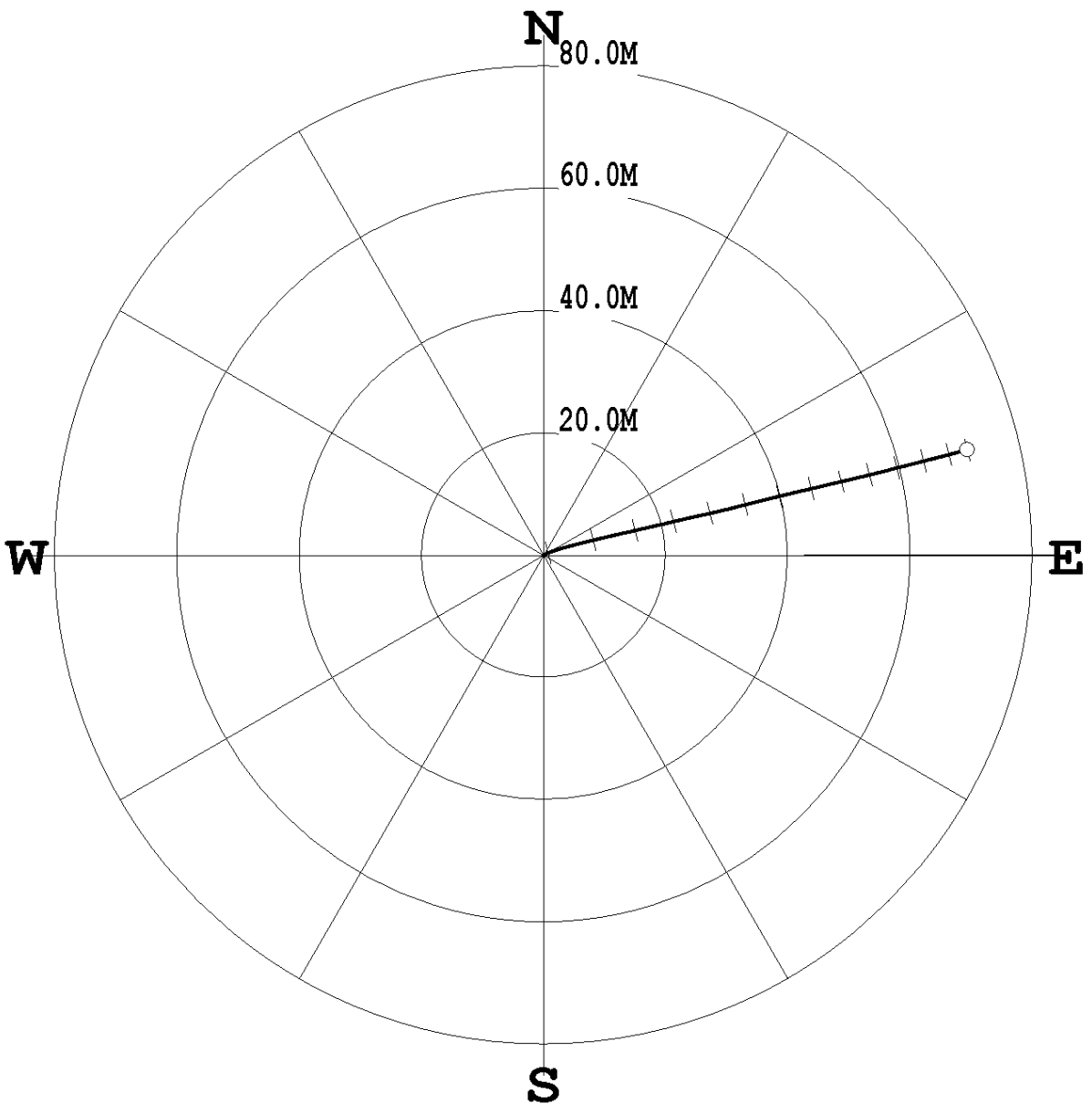
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM11-22B
DATE OF LOG: 09/06/12
PROBE: 9055A 59

MAG DECL: 15.3

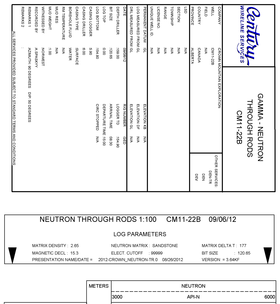
SCALE: 10 M/CM
TRUE DEPTH: 137.48 M
AZIMUTH: 76.0
DISTANCE: 71.4 M
+ = 10 M INCR
○ = BOTTOM OF HOLE

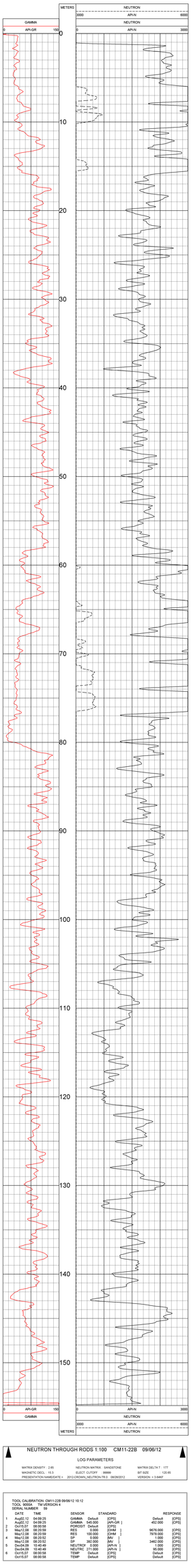


* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM11-22B
FIELD OFFICE : CENTURY GEO DATE OF LOG : 09/06/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 15.300 DEPTH UNITS : METERS
LOG: CM11-22B_09-06-12_12-50_9055A_.02_9.00_156.51_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
9.00	9.00	0.01	0.01	0.0	50.2	40.1	50.2
10.00	9.77	0.32	0.56	0.6	60.0	39.7	63.9
11.00	10.54	0.56	1.15	1.3	64.1	38.7	72.2
12.00	11.32	0.76	1.74	1.9	66.3	38.7	72.7
13.00	12.11	0.95	2.33	2.5	67.8	38.3	72.8
14.00	12.89	1.13	2.92	3.1	68.9	38.1	74.1
15.00	13.68	1.29	3.52	3.7	69.8	37.9	75.2
16.00	14.47	1.46	4.11	4.4	70.5	37.8	74.2
17.00	15.26	1.62	4.70	5.0	71.0	37.3	75.4
18.00	16.06	1.77	5.28	5.6	71.5	37.2	75.1
19.00	16.86	1.92	5.87	6.2	71.9	36.9	75.5
20.00	17.66	2.06	6.45	6.8	72.2	36.8	76.4
21.00	18.46	2.21	7.03	7.4	72.5	36.5	75.4
22.00	19.26	2.35	7.60	8.0	72.8	36.3	76.5
23.00	20.07	2.49	8.18	8.5	73.1	36.1	76.2
24.00	20.88	2.63	8.75	9.1	73.3	35.9	76.8
25.00	21.69	2.76	9.32	9.7	73.5	35.6	76.0
26.00	22.50	2.90	9.88	10.3	73.7	35.5	76.4
27.00	23.32	3.03	10.45	10.9	73.8	35.4	76.9
28.00	24.14	3.16	11.01	11.5	74.0	34.8	77.0
29.00	24.95	3.29	11.57	12.0	74.1	35.1	74.8
30.00	25.77	3.42	12.13	12.6	74.3	35.0	76.2
31.00	26.59	3.54	12.68	13.2	74.4	34.6	77.5
32.00	27.42	3.67	13.24	13.7	74.5	34.5	78.0
33.00	28.24	3.79	13.79	14.3	74.6	34.4	77.8
34.00	29.07	3.91	14.34	14.9	74.7	34.3	75.6
35.00	29.90	4.04	14.88	15.4	74.8	33.9	77.4
36.00	30.73	4.17	15.43	16.0	74.9	33.8	77.2
37.00	31.56	4.29	15.97	16.5	75.0	33.2	79.0
38.00	32.40	4.41	16.50	17.1	75.0	33.4	76.5
39.00	33.23	4.53	17.03	17.6	75.1	33.1	77.4
40.00	34.07	4.66	17.56	18.2	75.1	32.8	76.1
41.00	34.91	4.78	18.09	18.7	75.2	32.7	77.2
42.00	35.75	4.90	18.62	19.3	75.2	32.4	77.3
43.00	36.60	5.02	19.14	19.8	75.3	32.4	82.1
44.00	37.44	5.14	19.66	20.3	75.3	32.2	79.5
45.00	38.28	5.27	20.19	20.9	75.4	32.4	75.9
46.00	39.13	5.38	20.70	21.4	75.4	32.1	77.4
47.00	39.98	5.50	21.22	21.9	75.5	32.0	77.6
48.00	40.83	5.63	21.74	22.5	75.5	31.9	77.9
49.00	41.67	5.75	22.25	23.0	75.5	32.0	76.7
50.00	42.52	5.87	22.77	23.5	75.6	31.9	76.9
51.00	43.37	5.98	23.28	24.0	75.6	31.7	76.7
52.00	44.23	6.10	23.79	24.6	75.6	31.4	77.5
53.00	45.08	6.21	24.30	25.1	75.7	31.5	78.0
54.00	45.93	6.32	24.81	25.6	75.7	31.0	78.2
55.00	46.79	6.43	25.31	26.1	75.7	31.0	78.0
56.00	47.65	6.54	25.82	26.6	75.8	31.3	77.6
57.00	48.50	6.65	26.32	27.1	75.8	31.3	77.2
58.00	49.36	6.77	26.83	27.7	75.8	31.2	75.1
59.00	50.21	6.88	27.33	28.2	75.9	31.1	77.2
60.00	51.07	7.00	27.83	28.7	75.9	30.8	77.3
61.00	51.93	7.11	28.33	29.2	75.9	29.5	81.5
62.00	52.79	7.23	28.83	29.7	75.9	31.0	77.2
63.00	53.65	7.35	29.33	30.2	75.9	30.2	79.9
64.00	54.51	7.46	29.82	30.7	76.0	29.2	80.2
65.00	55.37	7.57	30.32	31.2	76.0	34.6	64.0
66.00	56.23	7.70	30.80	31.7	76.0	29.4	80.7
67.00	57.09	7.83	31.30	32.3	76.0	30.7	74.9
68.00	57.95	7.96	31.79	32.8	75.9	30.5	71.7
69.00	58.81	8.09	32.28	33.3	75.9	30.5	76.8
70.00	59.67	8.21	32.77	33.8	75.9	30.7	77.6
71.00	60.53	8.34	33.27	34.3	75.9	30.3	76.8
72.00	61.40	8.45	33.76	34.8	75.9	30.7	73.9
73.00	62.26	8.58	34.25	35.3	75.9	30.3	75.4
74.00	63.12	8.70	34.74	35.8	75.9	30.3	76.3
75.00	63.99	8.83	35.23	36.3	75.9	30.2	76.5
76.00	64.85	8.95	35.71	36.8	75.9	30.0	76.4
77.00	65.72	9.07	36.20	37.3	75.9	29.9	76.3
78.00	66.58	9.19	36.68	37.8	75.9	29.7	75.7
79.00	67.45	9.30	37.16	38.3	75.9	29.3	77.3
80.00	68.33	9.42	37.63	38.8	75.9	29.4	76.9
81.00	69.20	9.54	38.11	39.3	75.9	29.3	76.9
82.00	70.07	9.65	38.58	39.8	76.0	29.1	76.4
83.00	70.95	9.77	39.06	40.3	76.0	29.0	75.6
84.00	71.82	9.89	39.53	40.7	76.0	28.9	76.0
85.00	72.70	10.00	39.99	41.2	76.0	28.6	76.3
86.00	73.58	10.12	40.46	41.7	76.0	28.4	76.1
87.00	74.46	10.23	40.92	42.2	76.0	28.2	77.3
88.00	75.34	10.34	41.38	42.6	76.0	28.1	76.1
89.00	76.22	10.44	41.83	43.1	76.0	28.0	76.2
90.00	77.11	10.55	42.28	43.6	76.0	27.4	76.3
91.00	77.99	10.64	42.74	44.0	76.0	27.6	77.1
92.00	78.88	10.75	43.19	44.5	76.0	27.5	76.1
93.00	79.76	10.85	43.64	45.0	76.0	27.7	75.5
94.00	80.65	10.96	44.09	45.4	76.0	27.9	76.0
95.00	81.54	11.05	44.53	45.9	76.1	27.0	77.9
96.00	82.43	11.16	44.97	46.3	76.1	27.7	76.3
97.00	83.32	11.27	45.41	46.8	76.1	27.3	76.3
98.00	84.21	11.38	45.86	47.3	76.1	27.1	76.3
99.00	85.10	11.49	46.30	47.7	76.1	26.9	76.2
100.00	86.00	11.59	46.74	48.2	76.1	26.5	77.0
101.00	86.89	11.69	47.17	48.6	76.1	26.5	76.9
102.00	87.79	11.79	47.60	49.0	76.1	26.1	76.4
103.00	88.68	11.90	48.04	49.5	76.1	26.2	76.2
104.00	89.58	12.00	48.46	49.9	76.1	26.1	77.3
105.00	90.48	12.10	48.89	50.4	76.1	25.8	76.6
106.00	91.38	12.19	49.31	50.8	76.1	25.6	82.5
107.00	92.28	12.29	49.74	51.2	76.1	25.6	77.1
108.00	93.18	12.39	50.16	51.7	76.1	25.4	78.5
109.00	94.09	12.49	50.57	52.1	76.1	25.3	78.6
110.00	94.99	12.59	50.99	52.5	76.1	25.4	76.7
111.00	95.89	12.68	51.41	52.9	76.1	26.4	73.2
112.00	96.79	12.78	51.83	53.4	76.1	25.8	77.3
113.00	97.70	12.88	52.25	53.8	76.1	25.3	76.0
114.00	98.60	12.99	52.66	54.2	76.1	25.3	77.6
115.00	99.51	13.09	53.07	54.7	76.1	24.9	76.9
116.00	100.41	13.19	53.48	55.1	76.1	24.8	80.1
117.00	101.32	13.29	53.89	55.5	76.1	25.1	77.2
118.00	102.23	13.39	54.30	55.9	76.1	25.0	76.2
119.00	103.14	13.49	54.71	56.3	76.1	24.7	80.6
120.00	104.04	13.60	55.11	56.8	76.1	24.9	75.6
121.00	104.95	13.70	55.52	57.2	76.1	24.8	76.8
122.00	105.86	13.80	55.92	57.6	76.1	24.9	76.1
123.00	106.77	13.91	56.33	58.0	76.1	24.8	75.0
124.00	107.68	14.01	56.73	58.4	76.1	24.5	75.6
125.00	108.59	14.12	57.14	58.9	76.1	24.6	75.0
126.00	109.50	14.22	57.54	59.3	76.1	24.4	76.0
127.00	110.41	14.32	57.94	59.7	76.1	24.4	76.6
128.00	111.32	14.42	58.34	60.1	76.1	23.5	79.3
129.00	112.23	14.52	58.74	60.5	76.1	24.7	75.4
130.00	113.14	14.63	59.15	60.9	76.1	25.1	74.0
131.00	114.05	14.73	59.55	61.3	76.1	24.2	76.2
132.00	114.96	14.83	59.95	61.8	76.1	24.2	76.3
133.00	115.87	14.93	60.34	62.2	76.1	24.4	70.5
134.00	116.78	15.03	60.74	62.6	76.1	23.9	82.9
135.00	117.69	15.14	61.14	63.0	76.1	24.5	73.2
136.00	118.60	15.24	61.53	63.4	76.1	24.2	76.1
137.00	119.52	15.34	61.93	63.8	76.1	23.8	75.6
138.00	120.43	15.44	62.32	64.2	76.1	23.7	75.4
139.00	121.35	15.54	62.70	64.6	76.1	23.7	75.3
140.00	122.27	15.64	63.09	65.0	76.1	23.9	74.8
141.00	123.19	15.73	63.48	65.4	76.1	23.2	75.4
142.00	124.10	15.84	63.86	65.8	76.1	23.2	75.8
143.00	125.02	15.93	64.24	66.2	76.1	22.9	73.7
144.00	125.94	16.03	64.62	66.6	76.1	22.7	77.3
145.00	126.86	16.12	65.00	67.0	76.1	23.1	76.0
146.00	127.78	16.22	65.38	67.4	76.1	23.0	75.0
147.00	128.71	16.32	65.75	67.7	76.1	22.8	75.9
148.00	129.63	16.42	66.13	68.1	76.1	22.8	75.2
149.00	130.55	16.51	66.50	68.5	76.1	21.8	77.5
150.00	131.47	16.61	66.87	68.9	76.1	23.3	74.3
151.00	132.40	16.71	67.24	69.3	76.0	22.6	76.5
152.00	133.32	16.81	67.62	69.7	76.0	22.7	75.8
153.00	134.24	16.90	67.99	70.1	76.0	22.5	76.6
154.00	135.16	17.00	68.36	70.4	76.0	22.7	75.1
155.00	136.09	17.09	68.73	70.8	76.0	22.4	75.8
156.00	137.01	17.19	69.10	71.2	76.0	22.4	75.8
156.50	137.44	17.23	69.27	71.4	76.0	21.8	76.8





TOOL CALIBRATION: CM11-22B 09/06/12 10:12
TOOL: 9095A TM VERSION 4
SERIAL NUMBER: 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug01,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug01,12	04:09:25	NEUTRON	445.000	[API-N]	452.000	[CPS]
2	Oct15,07	08:09:08	THROST	Default	[API-N]		
3	Mar12,08	08:09:59	RES	0.000	[OHM]	9978.000	[CPS]
	Mar12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	Mar12,08	08:09:51	SP	0.000	[MV]	1.000	[CPS]
	Mar12,08	08:20:51	SP	50.000	[MV]	3462.000	[CPS]
5	Oct15,07	10:40:40	NEUTRC	0.000	[API-N]	56.000	[CPS]
	Oct04,09	10:40:49	NEUTRC	271.000	[API-N]	56.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-01A

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-01A
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:09/09/12	RIG NUMBER	:GED
DEPTH DRILLER	:178.00	LOGGER TD	:177.75
BIT SIZE	:120.65	ARRIVAL TIME	:21:30
LOG TOP	:0.00	DEPARTURE TIME	:04:00
LOG BOTTOM	:177.49	CIRC STOPPED	:N/A
CASING LOGGER	:9.00		
CASING DRILLER	:9.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

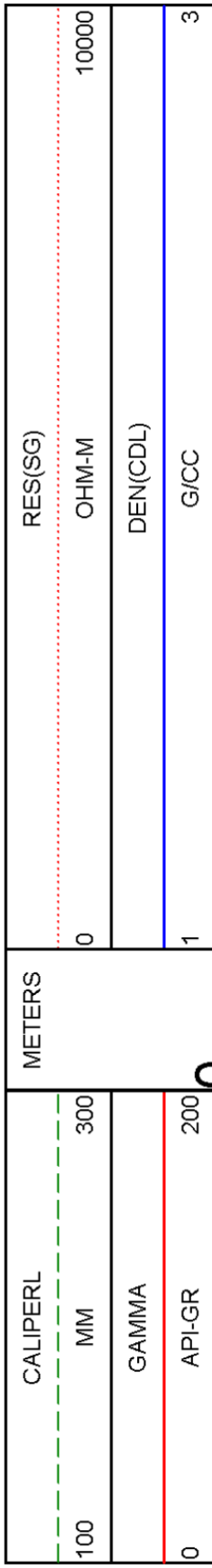
DENSITY 1:100 CM12-01A 09/09/12

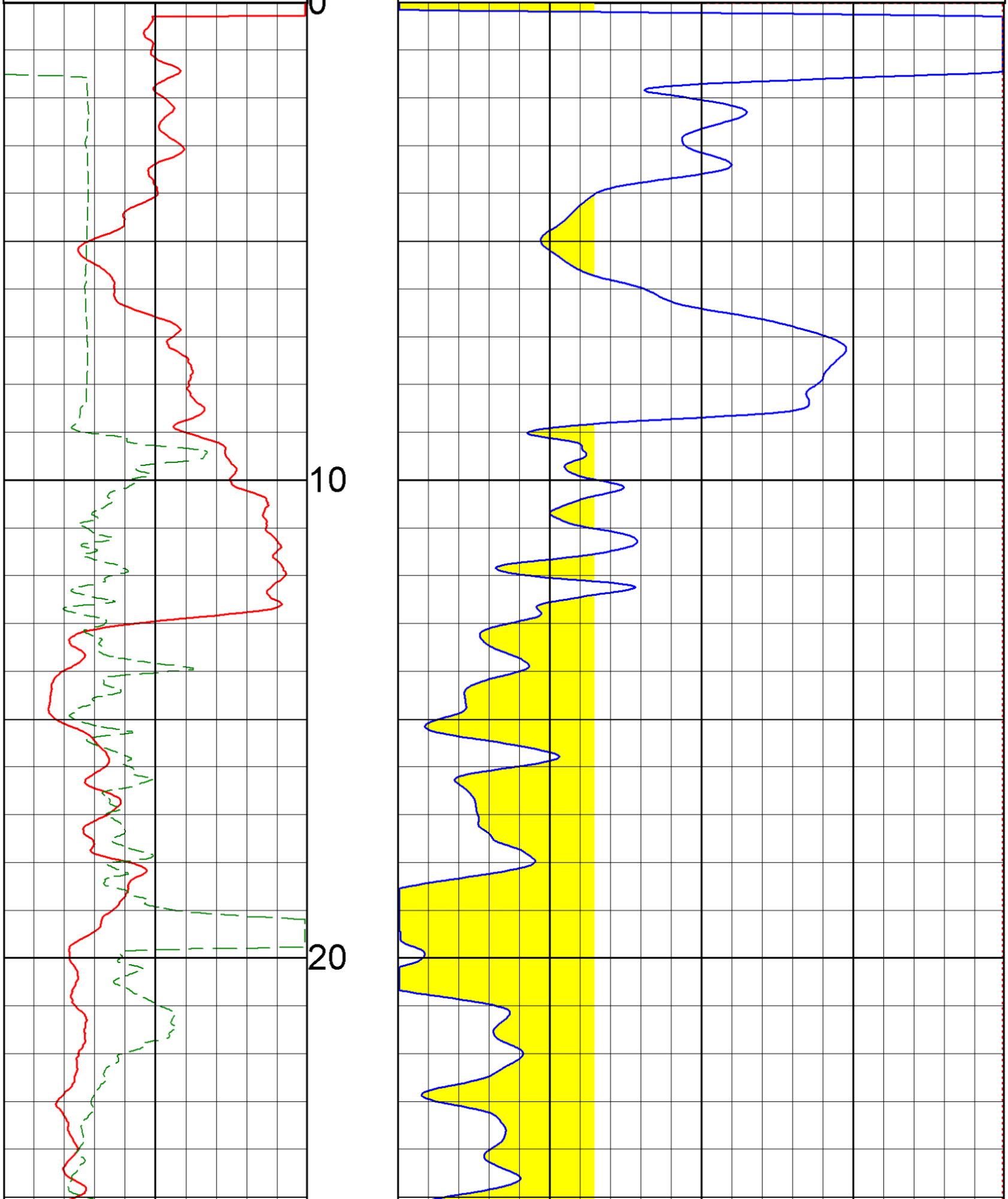
LOG PARAMETERS

MATRIX DENSITY : 2.65
MAGNETIC DECL : 15.3
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012

NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KF

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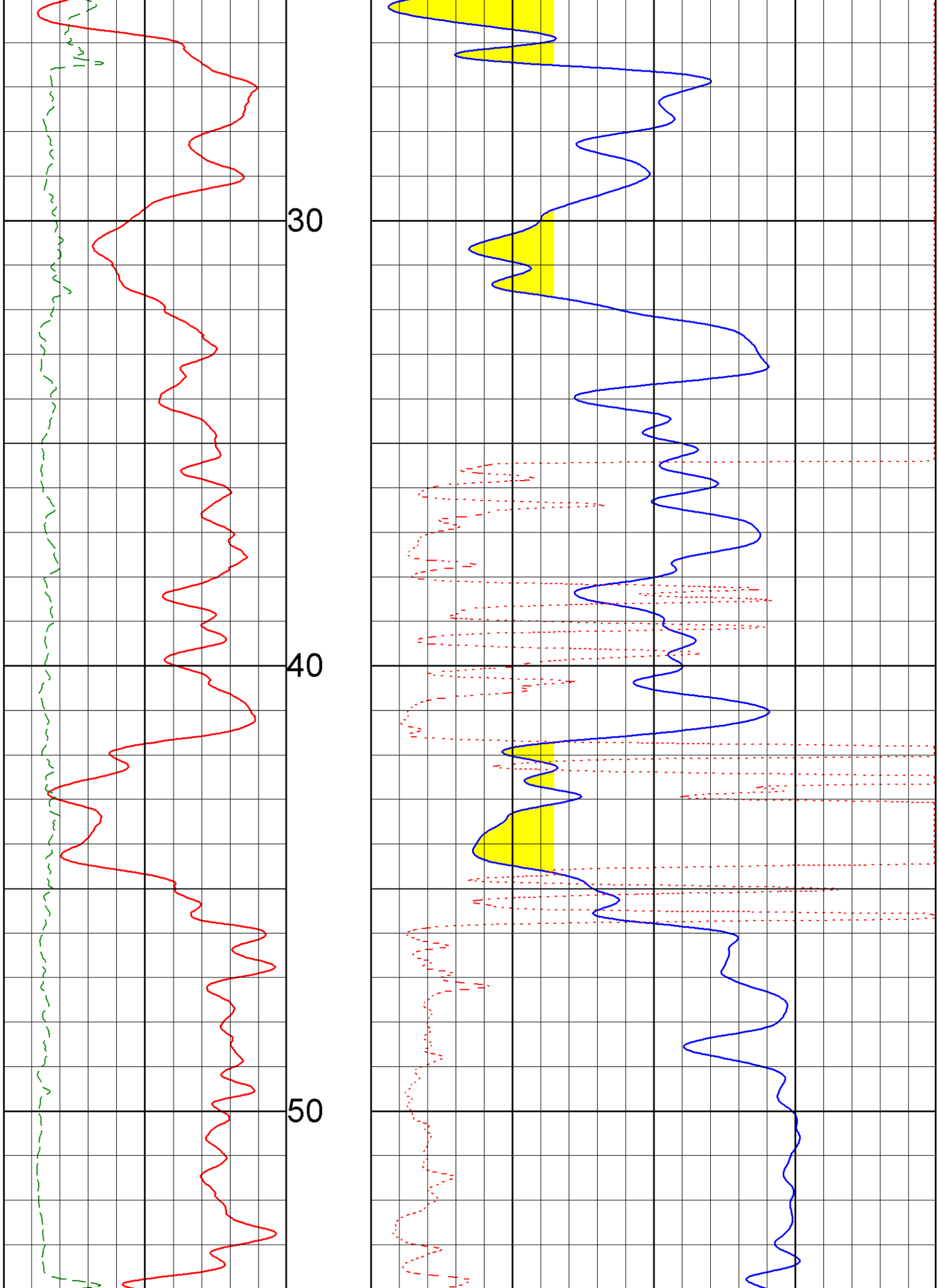
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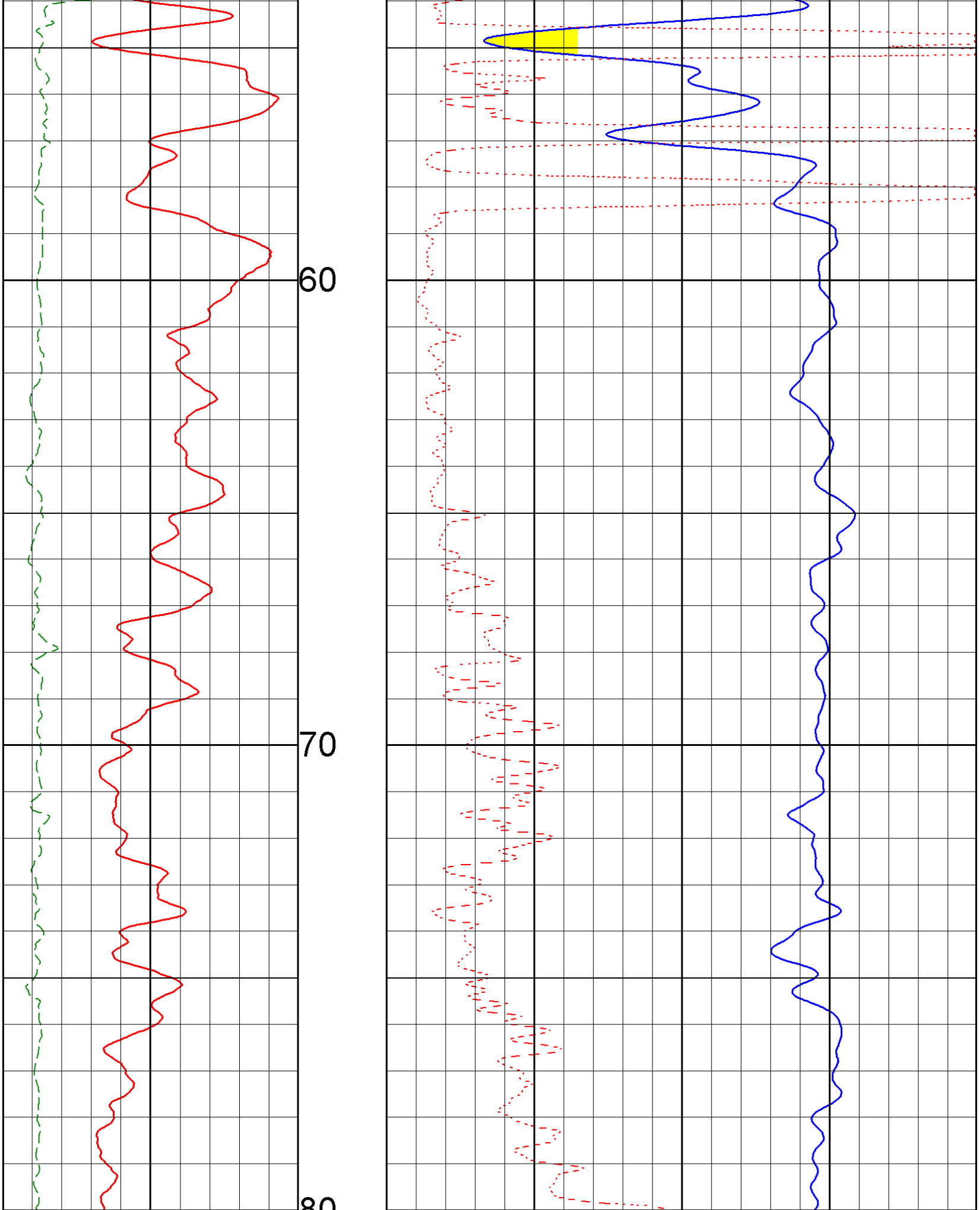
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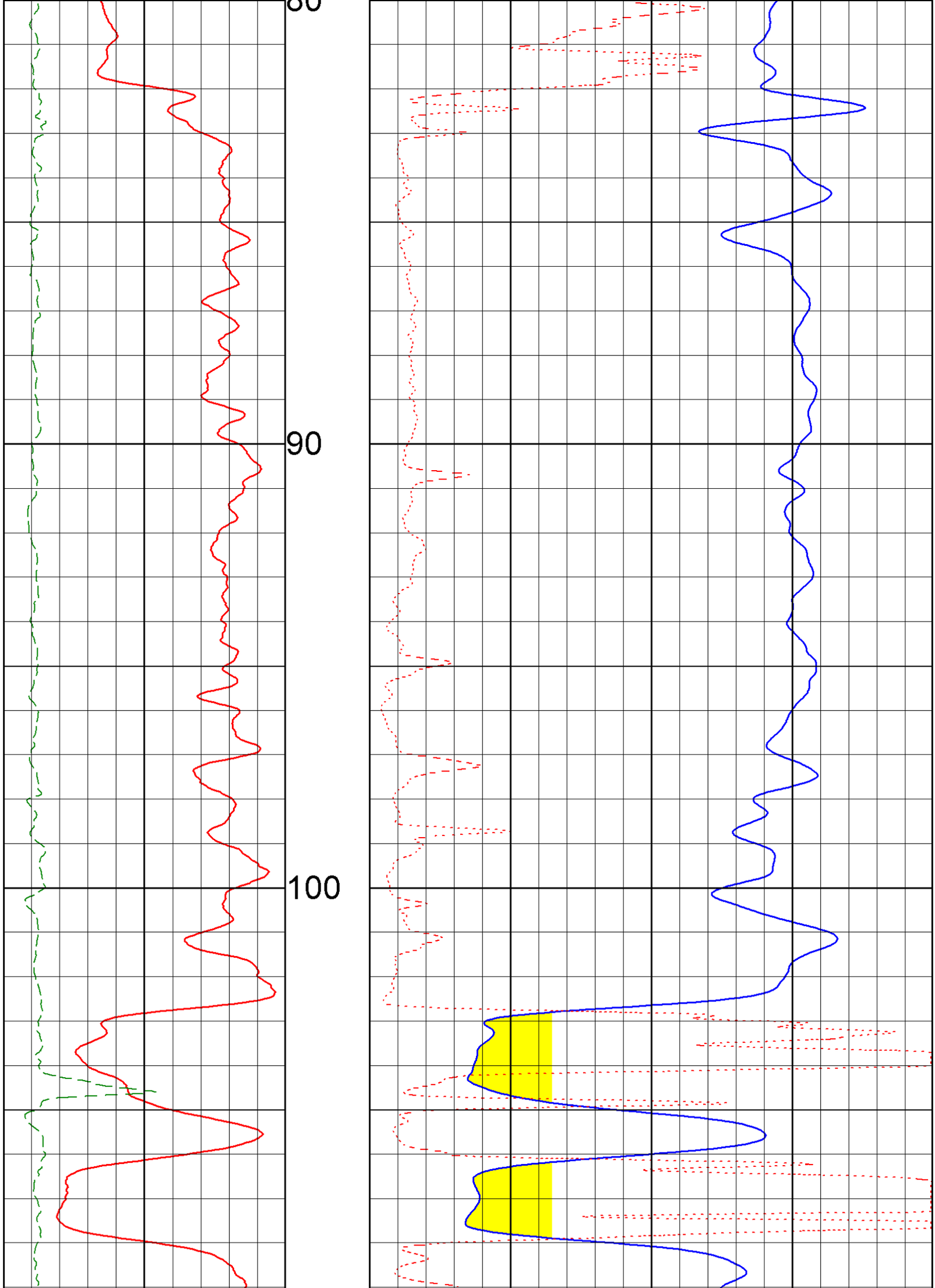
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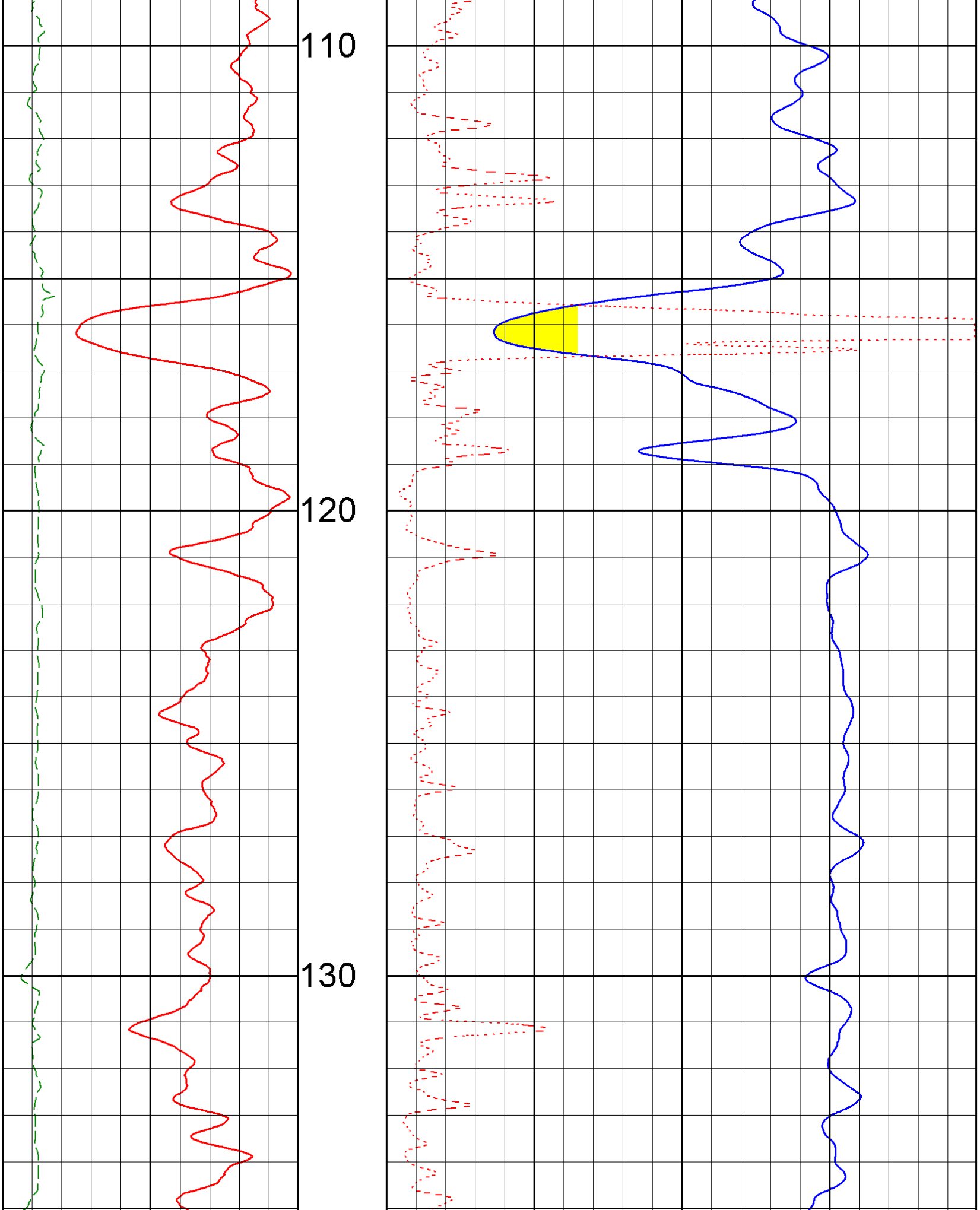
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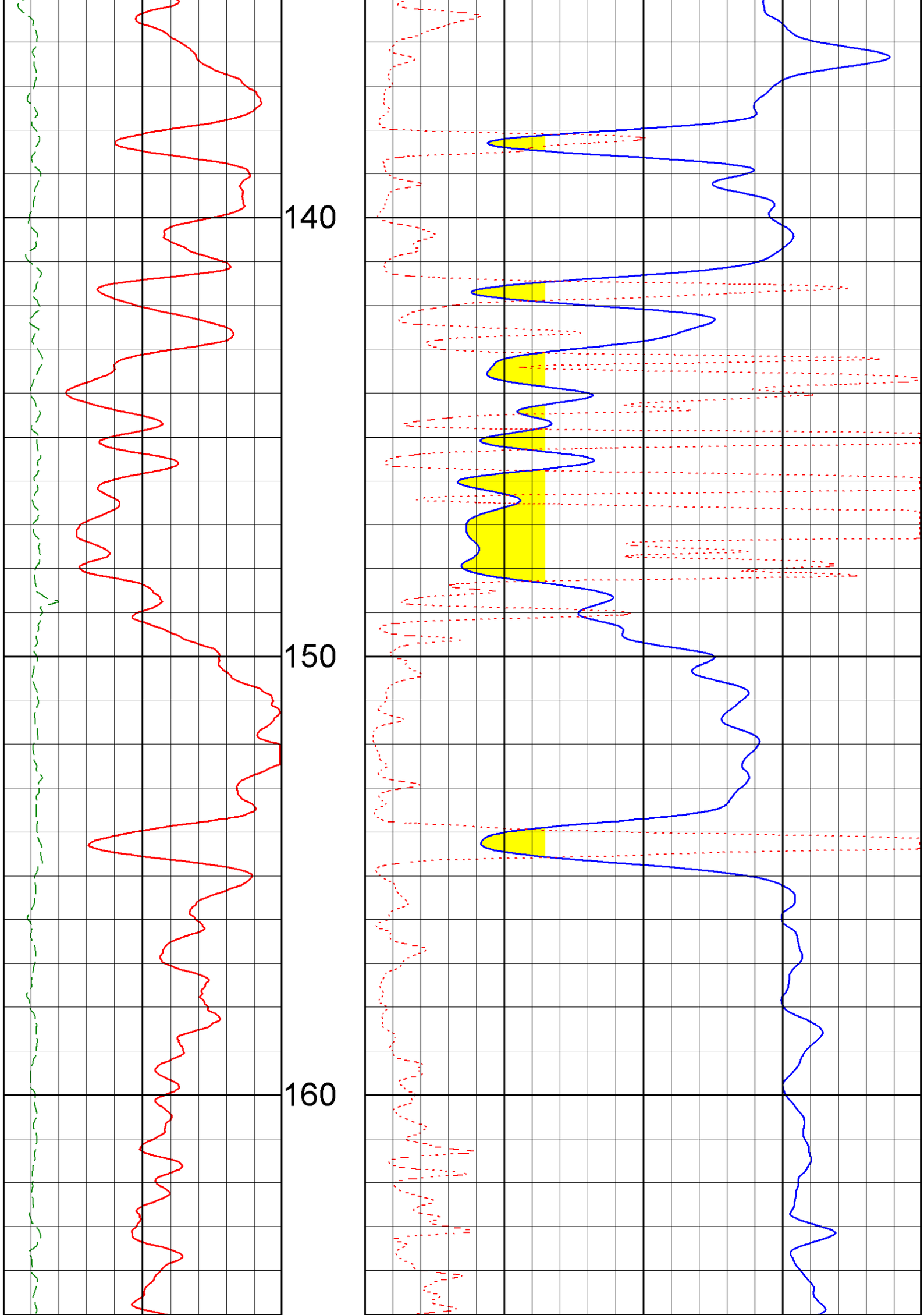
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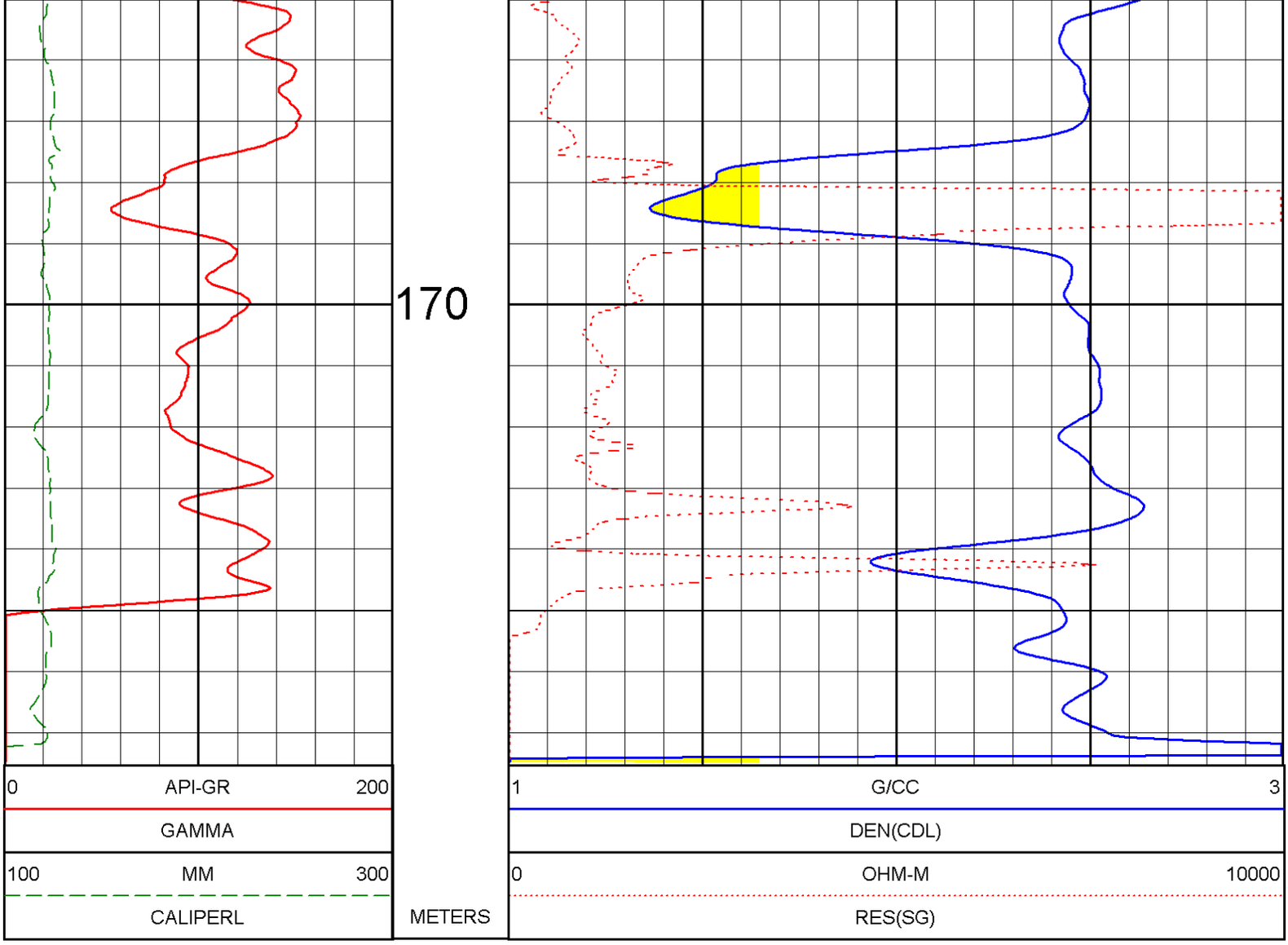


DENSITY 1:100 CM12-01A 09/09/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177

MAGNETIC DECL : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65

PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012 VERSION = 3.64KF

TOOL CALIBRATION CM12-01A 09/09/12 03:08
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

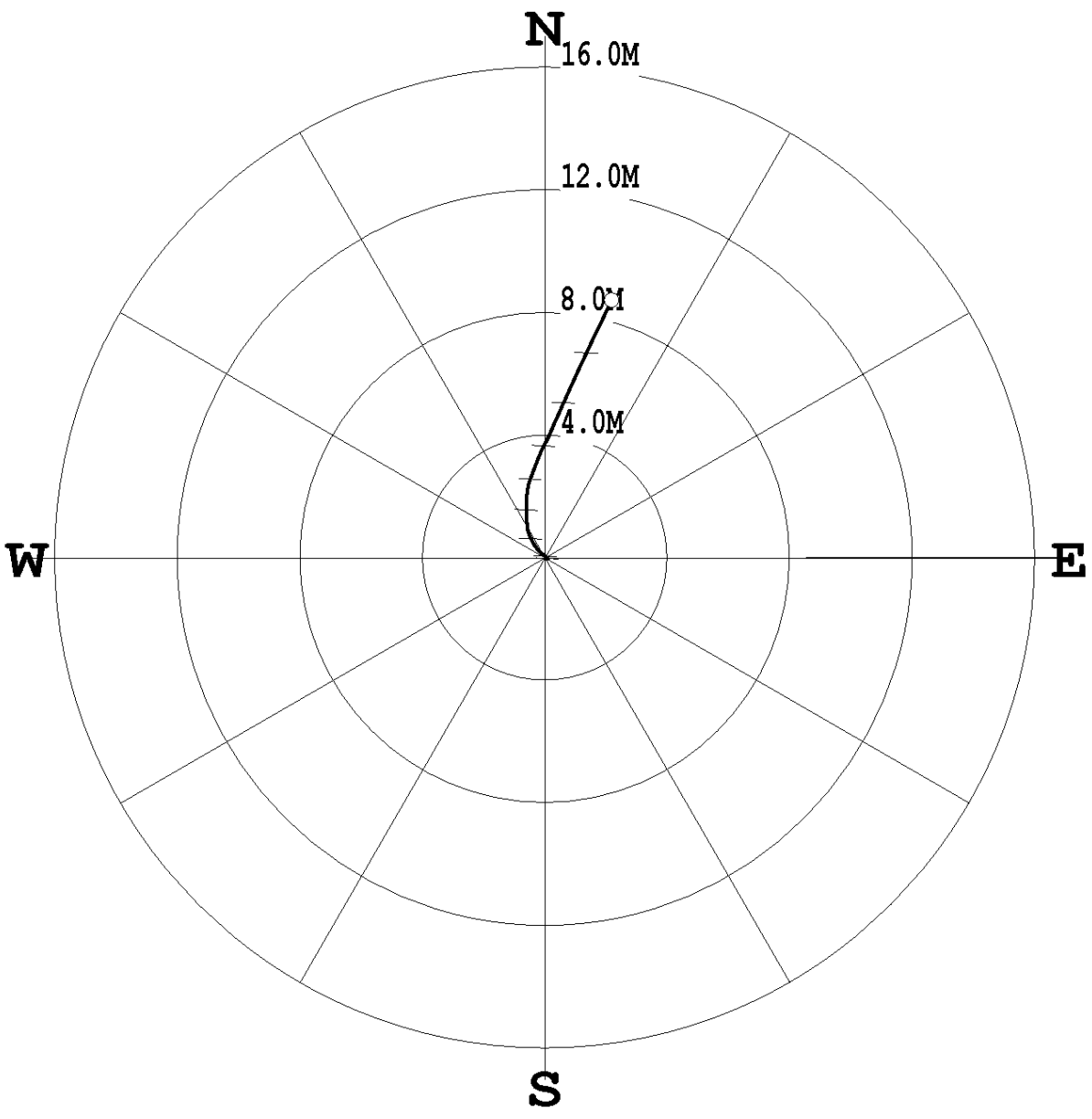
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-01A
DATE OF LOG: 09/09/12
PROBE: 9055A 59

MAG DECL: 15.3

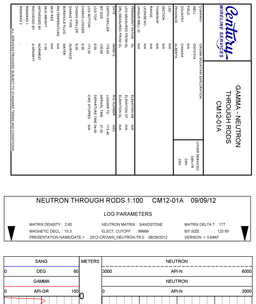
SCALE: 2 M/CM
TRUE DEPTH: 177.09 M
AZIMUTH: 14.6
DISTANCE: 8.7 M
+ = 20 M INCR
○ = BOTTOM OF HOLE

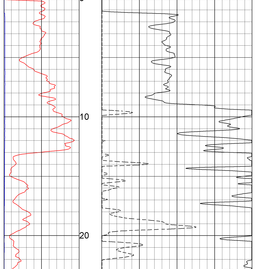


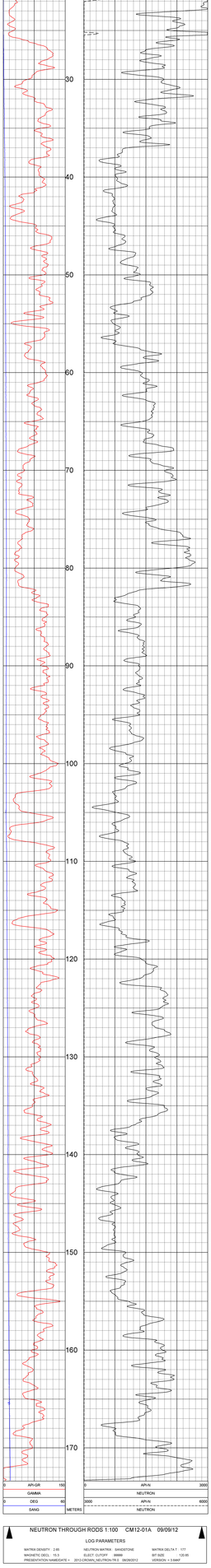
* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

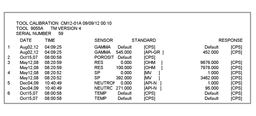
CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM12-01A
FIELD OFFICE : CENTURY GEO DATE OF LOG : 09/09/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 15.300 DEPTH UNITS : METERS
LOG: CM12-01A_09-09-12_02-28_9055A_.02_12.00_177.43_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
12.02	12.02	-0.00	0.00	0.0	136.1	0.8	136.1
13.00	13.00	-0.01	0.01	0.0	117.5	0.6	73.2
14.00	14.00	-0.01	0.02	0.0	111.7	0.4	114.4
15.00	15.00	-0.01	0.04	0.0	109.7	0.8	104.6
16.00	16.00	-0.02	0.05	0.1	109.9	0.6	104.5
17.00	17.00	-0.02	0.06	0.1	108.9	0.5	117.8
18.00	18.00	-0.02	0.07	0.1	107.7	0.1	44.6
19.00	19.00	-0.02	0.07	0.1	105.3	0.4	53.0
20.00	20.00	-0.02	0.08	0.1	103.5	0.4	66.2
21.00	21.00	-0.02	0.08	0.1	102.8	0.3	95.4
22.00	22.00	-0.02	0.08	0.1	102.7	0.1	78.0
23.00	23.00	-0.02	0.09	0.1	102.3	0.5	126.0
24.00	24.00	-0.02	0.09	0.1	103.0	0.2	151.4
25.00	25.00	-0.02	0.09	0.1	104.0	0.2	299.3
26.00	26.00	-0.02	0.09	0.1	105.6	0.1	309.5
27.00	27.00	-0.03	0.09	0.1	106.3	0.5	110.3
28.00	28.00	-0.03	0.09	0.1	107.2	0.6	233.6
29.00	29.00	-0.03	0.09	0.1	111.0	0.2	21.8
30.00	30.00	-0.03	0.09	0.1	109.5	0.1	307.0
31.00	31.00	-0.03	0.09	0.1	109.5	0.3	336.9
32.00	32.00	-0.03	0.09	0.1	108.1	0.4	0.9
33.00	33.00	-0.03	0.09	0.1	106.8	0.6	287.0
34.00	34.00	-0.02	0.08	0.1	105.1	0.3	349.2
35.00	35.00	-0.02	0.08	0.1	101.8	0.7	321.1
36.00	36.00	-0.00	0.07	0.1	94.1	0.9	315.5
37.00	37.00	0.01	0.06	0.1	83.7	1.1	335.4
38.00	38.00	0.02	0.04	0.1	62.5	1.5	315.2
39.00	39.00	0.04	0.03	0.0	33.5	1.4	307.2
40.00	40.00	0.06	0.01	0.1	5.4	1.8	289.0
41.00	41.00	0.08	-0.02	0.1	346.3	1.7	312.9
42.00	42.00	0.09	-0.04	0.1	335.1	1.6	298.1
43.00	43.00	0.11	-0.07	0.1	329.2	2.1	316.1
44.00	44.00	0.13	-0.09	0.2	324.9	2.2	305.1
45.00	45.00	0.15	-0.12	0.2	322.3	2.0	315.0
46.00	45.99	0.17	-0.14	0.2	320.3	2.1	317.9
47.00	46.99	0.20	-0.17	0.3	319.2	2.2	311.7
48.00	47.99	0.23	-0.20	0.3	318.7	2.2	318.3
49.00	48.99	0.25	-0.22	0.3	318.5	2.2	322.4
50.00	49.99	0.28	-0.25	0.4	318.7	2.3	321.2
51.00	50.99	0.32	-0.27	0.4	319.1	2.3	322.6
52.00	51.99	0.35	-0.30	0.5	319.4	2.3	317.9
53.00	52.99	0.38	-0.32	0.5	319.9	2.4	328.8
54.00	53.99	0.42	-0.34	0.5	320.5	2.1	329.8
55.00	54.99	0.45	-0.37	0.6	320.8	2.2	326.5
56.00	55.99	0.48	-0.39	0.6	321.4	2.4	343.5
57.00	56.99	0.52	-0.41	0.7	321.8	2.5	331.5
58.00	57.99	0.55	-0.42	0.7	322.6	2.7	320.6
59.00	58.98	0.59	-0.44	0.7	323.1	2.5	329.1
60.00	59.98	0.63	-0.46	0.8	323.5	2.3	331.2
61.00	60.98	0.67	-0.48	0.8	324.3	2.4	330.7
62.00	61.98	0.71	-0.50	0.9	324.7	2.0	338.1
63.00	62.98	0.75	-0.52	0.9	325.3	2.6	345.0
64.00	63.98	0.79	-0.53	0.9	326.1	3.1	335.6
65.00	64.98	0.83	-0.54	1.0	326.8	2.5	343.8
66.00	65.98	0.87	-0.55	1.0	327.6	2.8	348.4
67.00	66.98	0.92	-0.56	1.1	328.5	2.6	344.6
68.00	67.98	0.96	-0.57	1.1	329.3	2.8	348.7
69.00	68.97	1.01	-0.58	1.2	330.3	2.7	356.3
70.00	69.97	1.06	-0.58	1.2	331.2	2.7	353.7
71.00	70.97	1.10	-0.59	1.2	332.0	2.8	351.3
72.00	71.97	1.15	-0.59	1.3	332.8	2.8	350.8
73.00	72.97	1.20	-0.60	1.3	333.5	2.7	352.8
74.00	73.97	1.25	-0.60	1.4	334.3	3.1	358.1
75.00	74.97	1.30	-0.61	1.4	335.1	3.4	355.6
76.00	75.97	1.35	-0.61	1.5	335.8	3.0	0.4
77.00	76.96	1.41	-0.61	1.5	336.5	3.0	1.6
78.00	77.96	1.46	-0.61	1.6	337.2	3.0	355.5
79.00	78.96	1.51	-0.62	1.6	337.9	3.5	354.9
80.00	79.96	1.56	-0.62	1.7	338.5	3.0	357.5
81.00	80.96	1.62	-0.62	1.7	339.1	3.3	11.8
82.00	81.96	1.67	-0.62	1.8	339.8	3.1	9.2
83.00	82.96	1.73	-0.61	1.8	340.4	2.9	0.4
84.00	83.95	1.78	-0.61	1.9	341.0	2.7	2.1
85.00	84.95	1.83	-0.61	1.9	341.6	3.0	12.3
86.00	85.95	1.88	-0.61	2.0	342.2	3.2	5.4
87.00	86.95	1.94	-0.60	2.0	342.7	3.2	3.2
88.00	87.95	1.99	-0.60	2.1	343.2	2.9	2.9
89.00	88.95	2.04	-0.59	2.1	343.8	2.9	7.7
90.00	89.95	2.10	-0.59	2.2	344.4	3.0	2.6
91.00	90.94	2.14	-0.58	2.2	344.8	3.0	23.8
92.00	91.94	2.19	-0.58	2.3	345.3	2.8	10.6
93.00	92.94	2.24	-0.57	2.3	345.8	2.7	13.7
94.00	93.94	2.28	-0.56	2.4	346.3	2.6	13.9
95.00	94.94	2.33	-0.55	2.4	346.7	2.9	18.3
96.00	95.94	2.38	-0.54	2.4	347.2	2.5	27.4
97.00	96.94	2.42	-0.53	2.5	347.7	2.8	7.3
98.00	97.94	2.47	-0.51	2.5	348.3	2.9	21.1
99.00	98.94	2.52	-0.50	2.6	348.9	3.0	17.8
100.00	99.93	2.57	-0.48	2.6	349.4	2.8	19.5
101.00	100.93	2.61	-0.46	2.7	350.0	3.0	20.9
102.00	101.93	2.66	-0.45	2.7	350.5	2.8	20.4
103.00	102.93	2.71	-0.43	2.7	351.0	2.8	19.9
104.00	103.93	2.76	-0.41	2.8	351.6	2.9	17.7
105.00	104.93	2.81	-0.39	2.8	352.1	3.0	17.4
106.00	105.93	2.86	-0.37	2.9	352.6	3.1	20.4
107.00	106.92	2.91	-0.35	2.9	353.1	3.2	21.5
108.00	107.92	2.96	-0.34	3.0	353.5	3.0	23.4
109.00	108.92	3.01	-0.32	3.0	354.0	3.7	15.3
110.00	109.92	3.06	-0.29	3.1	354.5	2.9	25.5
111.00	110.92	3.12	-0.27	3.1	355.0	3.5	19.4
112.00	111.92	3.18	-0.25	3.2	355.5	3.5	22.9
113.00	112.91	3.23	-0.23	3.2	356.0	3.4	26.7
114.00	113.91	3.29	-0.20	3.3	356.5	3.5	22.7
115.00	114.91	3.35	-0.18	3.4	356.9	3.6	24.3
116.00	115.91	3.41	-0.16	3.4	357.4	3.6	25.6
117.00	116.91	3.47	-0.13	3.5	357.8	3.8	26.4
118.00	117.90	3.52	-0.10	3.5	358.3	3.4	27.8
119.00	118.90	3.59	-0.08	3.6	358.8	3.6	24.2
120.00	119.90	3.64	-0.05	3.6	359.3	3.6	34.8
121.00	120.90	3.70	-0.01	3.7	359.8	4.0	34.7
122.00	121.89	3.77	0.02	3.8	0.3	3.9	22.9
123.00	122.89	3.83	0.05	3.8	0.8	4.1	25.2
124.00	123.89	3.89	0.09	3.9	1.3	4.0	27.7
125.00	124.89	3.96	0.12	4.0	1.7	4.0	12.6
126.00	125.88	4.02	0.15	4.0	2.1	4.2	24.5
127.00	126.88	4.09	0.18	4.1	2.5	4.2	21.1
128.00	127.88	4.16	0.21	4.2	2.9	4.3	21.4
129.00	128.88	4.23	0.24	4.2	3.2	4.4	26.0
130.00	129.87	4.30	0.27	4.3	3.6	4.8	26.9
131.00	130.87	4.38	0.30	4.4	3.9	4.7	22.6
132.00	131.87	4.45	0.33	4.5	4.3	4.8	23.5
133.00	132.86	4.52	0.37	4.5	4.6	4.6	26.3
134.00	133.86	4.60	0.40	4.6	5.0	4.7	23.5
135.00	134.86	4.67	0.43	4.7	5.3	4.3	26.6
136.00	135.85	4.74	0.47	4.8	5.6	4.9	18.2
137.00	136.85	4.82	0.50	4.8	5.9	4.5	23.4
138.00	137.85	4.90	0.53	4.9	6.2	4.8	24.1
139.00	138.84	4.97	0.57	5.0	6.5	4.8	23.2
140.00	139.84	5.05	0.60	5.1	6.8	4.7	30.3
141.00	140.84	5.12	0.64	5.2	7.1	4.7	23.7
142.00	141.83	5.20	0.67	5.2	7.4	4.7	23.8
143.00	142.83	5.27	0.71	5.3	7.6	4.6	19.0
144.00	143.83	5.35	0.74	5.4	7.9	5.2	28.3
145.00	144.82	5.43	0.77	5.5	8.1	5.0	24.5
146.00	145.82	5.50	0.81	5.6	8.3	4.8	27.1
147.00	146.81	5.58	0.84	5.6	8.6	5.0	32.9
148.00	147.81	5.66	0.88	5.7	8.8	4.4	23.5
149.00	148.81	5.74	0.91	5.8	9.1	5.0	23.4
150.00	149.80	5.81	0.95	5.9	9.3	5.0	23.4
151.00	150.80	5.89	0.99	6.0	9.5	5.2	24.1
152.00	151.80	5.98	1.02	6.1	9.7	5.0	15.8
153.00	152.79	6.06	1.06	6.2	9.9	5.4	25.2
154.00	153.79	6.15	1.10	6.2	10.2	5.3	25.1
155.00	154.78	6.23	1.14	6.3	10.4	5.3	26.6
156.00	155.78	6.31	1.18	6.4	10.6	5.3	26.4
157.00	156.77	6.40	1.22	6.5	10.8	5.2	14.5
158.00	157.77	6.48	1.26	6.6	11.0	5.7	23.7
159.00	158.76	6.57	1.30	6.7	11.2	5.7	24.9
160.00	159.76	6.66	1.34	6.8	11.4	5.7	26.1
161.00	160.75	6.75	1.39	6.9	11.6	5.8	24.0
162.00	161.75	6.84	1.43	7.0	11.8	5.7	22.0
163.00	162.74	6.93	1.47	7.1	12.0	6.0	23.8
164.00	163.74	7.02	1.51	7.2	12.2	6.3	26.0
165.00	164.73	7.12	1.56	7.3	12.3	6.1	23.9
166.00	165.73	7.21	1.60	7.4	12.5	6.1	27.4
167.00	166.72	7.31	1.65	7.5	12.7	6.1	27.4
168.00	167.72	7.41	1.70	7.6	12.9	6.1	26.2
169.00	168.71	7.50	1.75	7.7	13.1	6.3	27.8
170.00	169.70	7.60	1.80	7.8	13.3	6.7	26.6
171.00	170.70	7.70	1.84	7.9	13.5	7.2	27.8
172.00	171.69	7.81	1.89	8.0	13.6	6.8	18.8
173.00	172.68	7.92	1.94	8.2	13.8	6.9	20.7
174.00	173.68	8.03	1.99	8.3	14.0	7.1	24.5
175.00	174.67	8.13	2.05	8.4	14.2	6.9	28.7
176.00	175.66	8.24	2.11	8.5	14.3	6.9	27.8
177.00	176.65	8.34	2.16	8.6	14.5	7.2	24.5
177.44	177.05	8.39	2.18	8.7	14.6	7.2	24.1









TOOL CALIBRATION: CM12-01A 09/09/12 00:10
TOOL: 9058A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02.12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
2	Oct10.27	08:00:58	NEUTRON	2710.000	[API-N]	453.000	[CPS]
	Oct10.27	08:00:58	PORDIFF	Default	[CPS]		
3	May12.08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
4	May12.08	08:20:59	SP	0.000	[MV]	11.000	[CPS]
	May12.08	08:20:52	SP	0.000	[MV]	11.000	[CPS]
	May12.08	08:20:52	SP	382.000	[MV]	3462.000	[CPS]
5	Dec04.08	10:40:49	NEUTRON	0.000	[API-N]	0.000	[CPS]
	Dec04.08	10:40:49	NEUTRON	2710.000	[API-N]	453.000	[CPS]
6	Oct10.27	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct10.27	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-01B

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-01B
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:09/14/12	RIG NUMBER	:GED
DEPTH DRILLER	:138.00	LOGGER TD	:135.20
BIT SIZE	:120.65	ARRIVAL TIME	:09:00
LOG TOP	:0.00	DEPARTURE TIME	:14:30
LOG BOTTOM	:132.28	CIRC STOPPED	:N/A
CASING LOGGER	:12.00		
CASING DRILLER	:12.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:AZIMUTH: 250 DEGREES DIP: 50 DEGREES		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

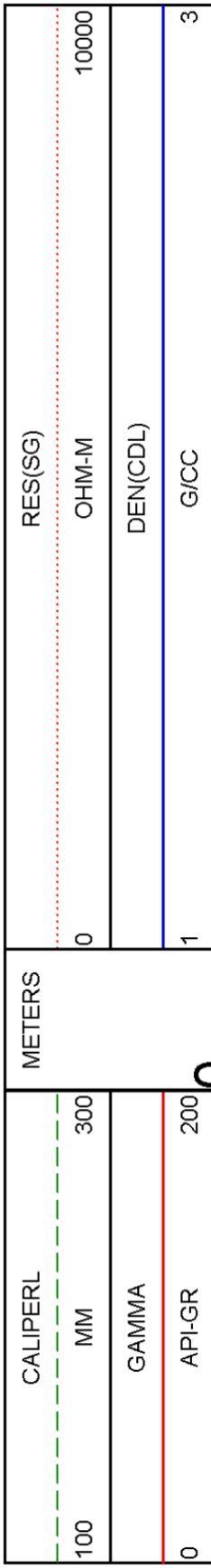
DENSITY 1:100 CM12-01B 09/14/12

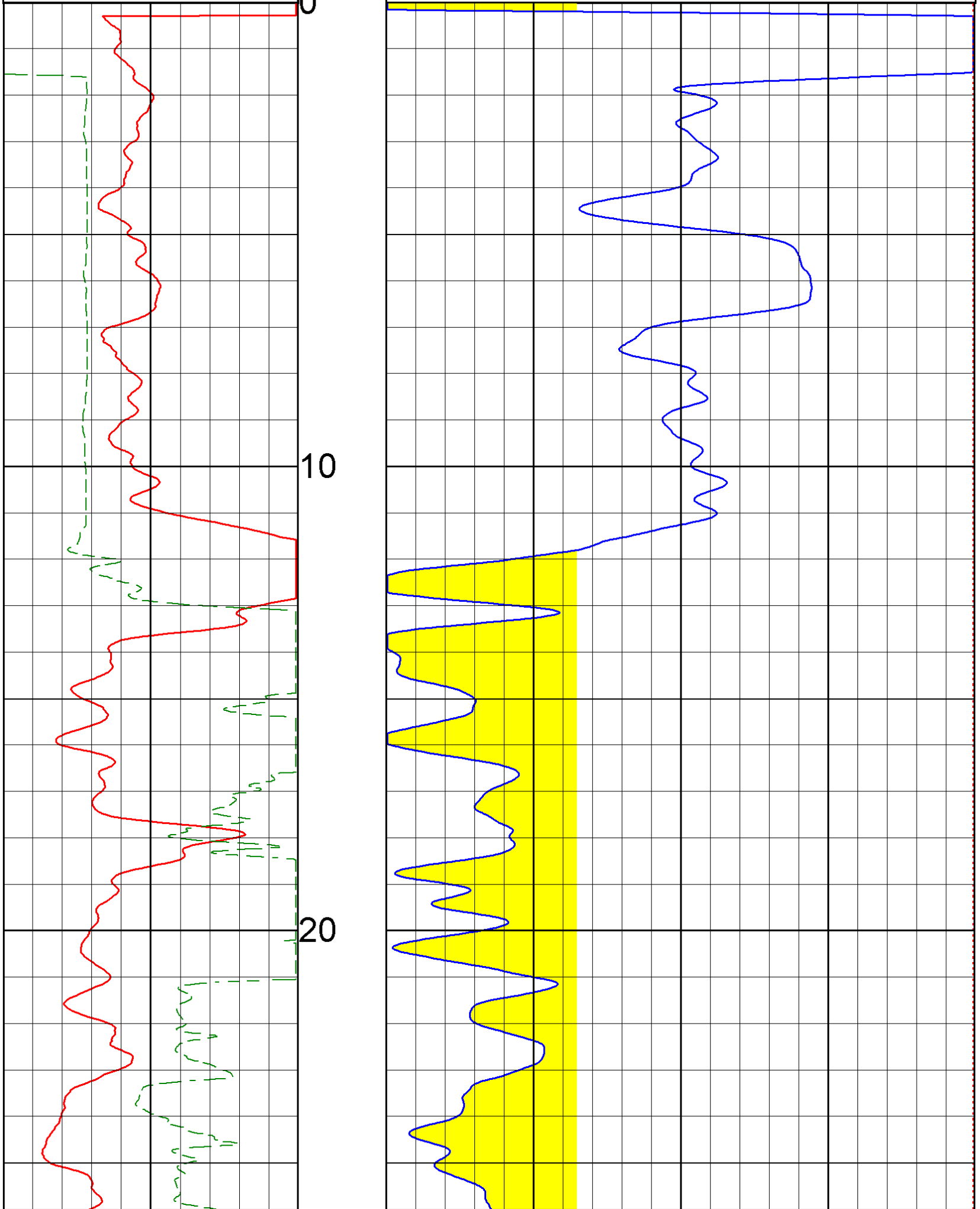
LOG PARAMETERS

MATRIX DENSITY : 2.65
MAGNETIC DECL : 15.3
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012

NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KF

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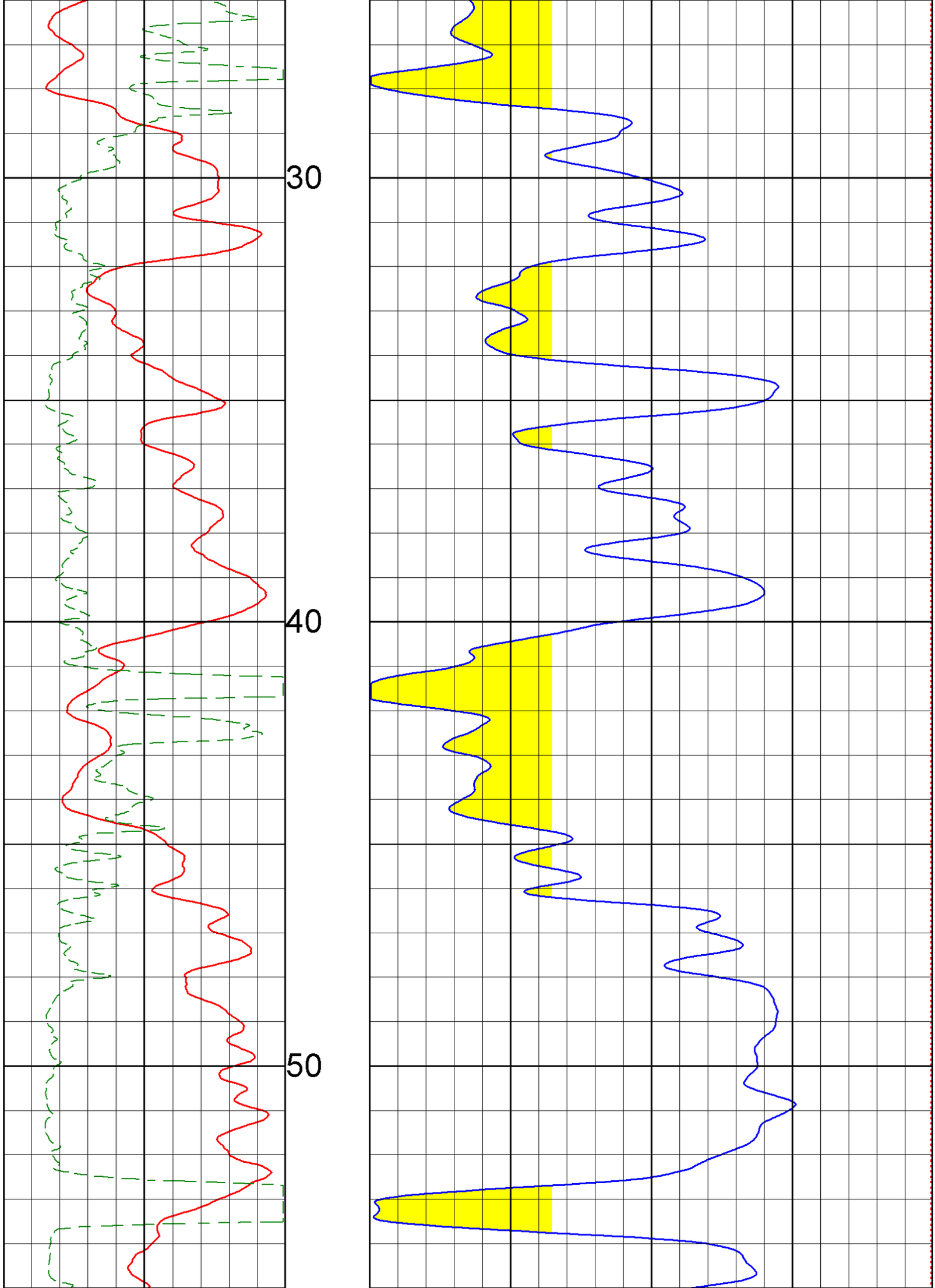
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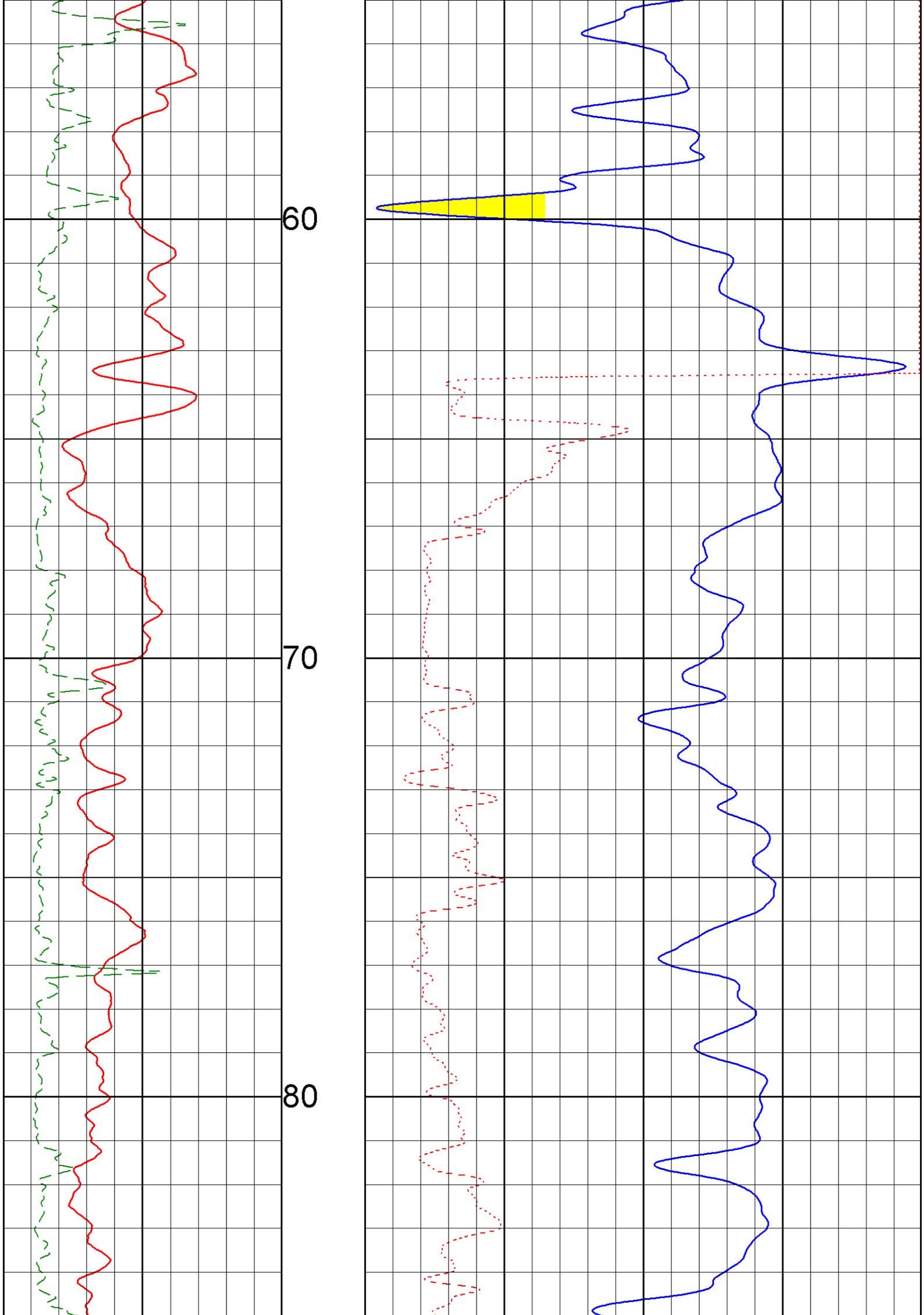
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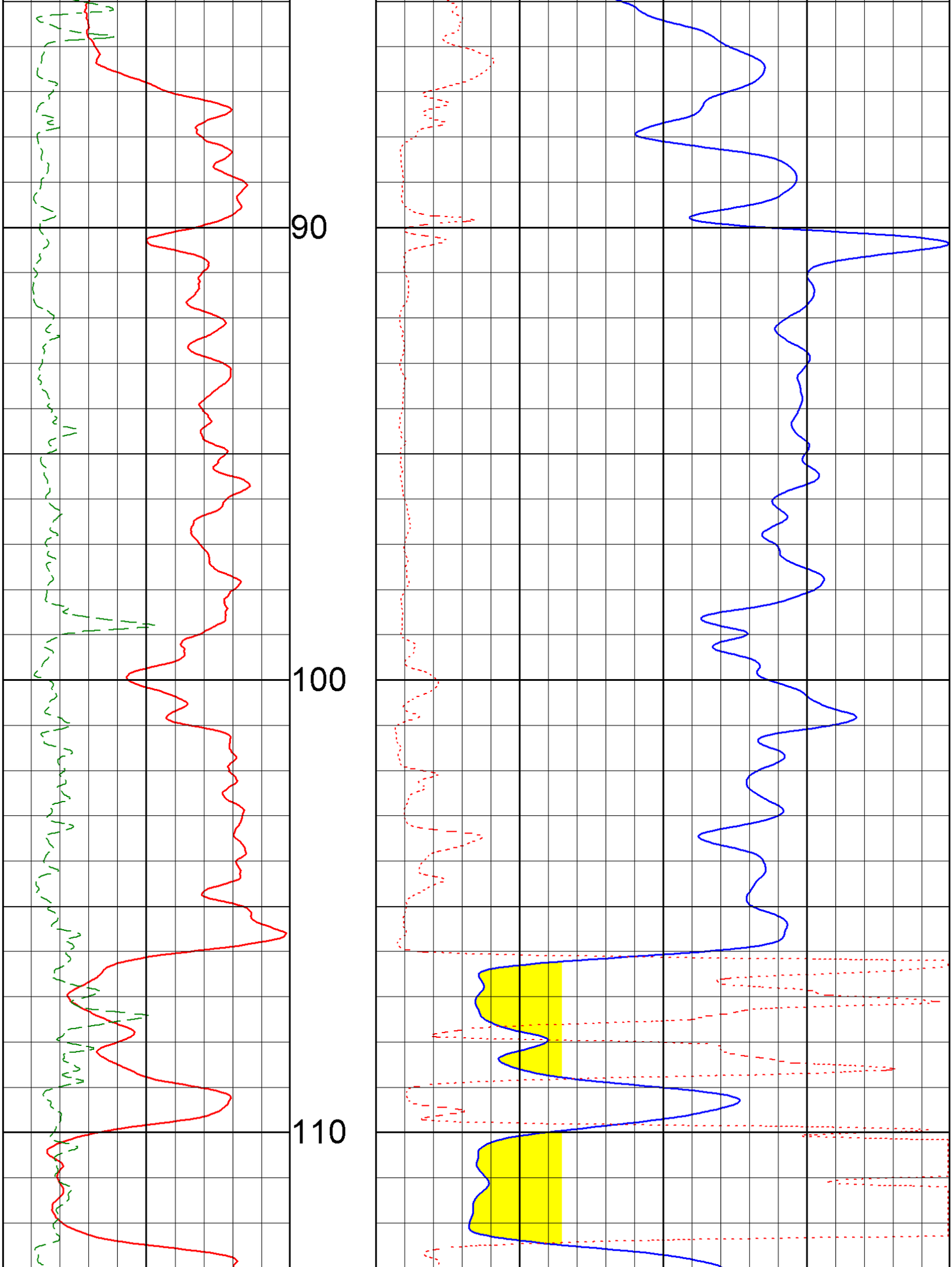
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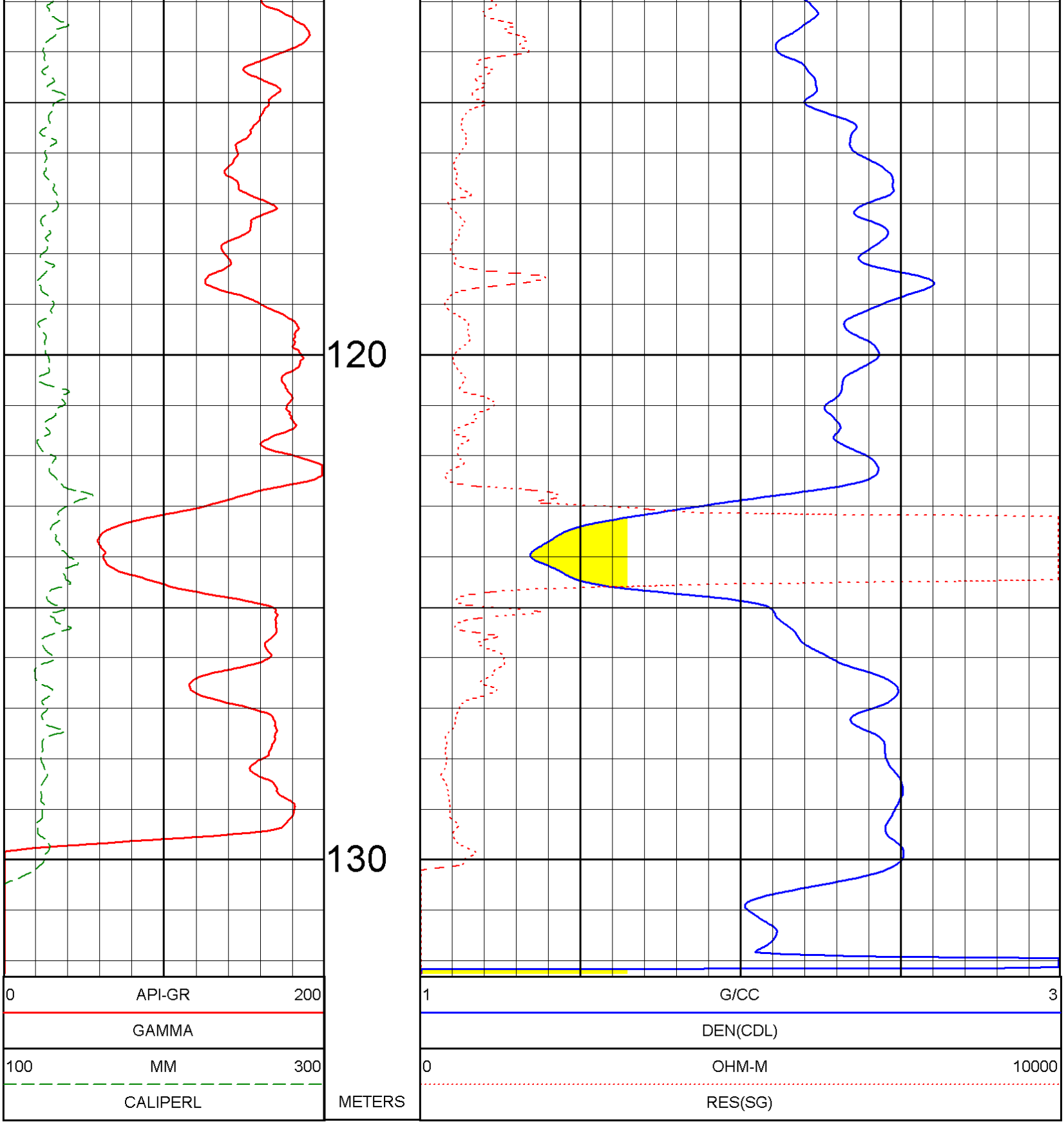


DENSITY 1:100 CM12-01B 09/14/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM12-01B 09/14/12 13:39
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

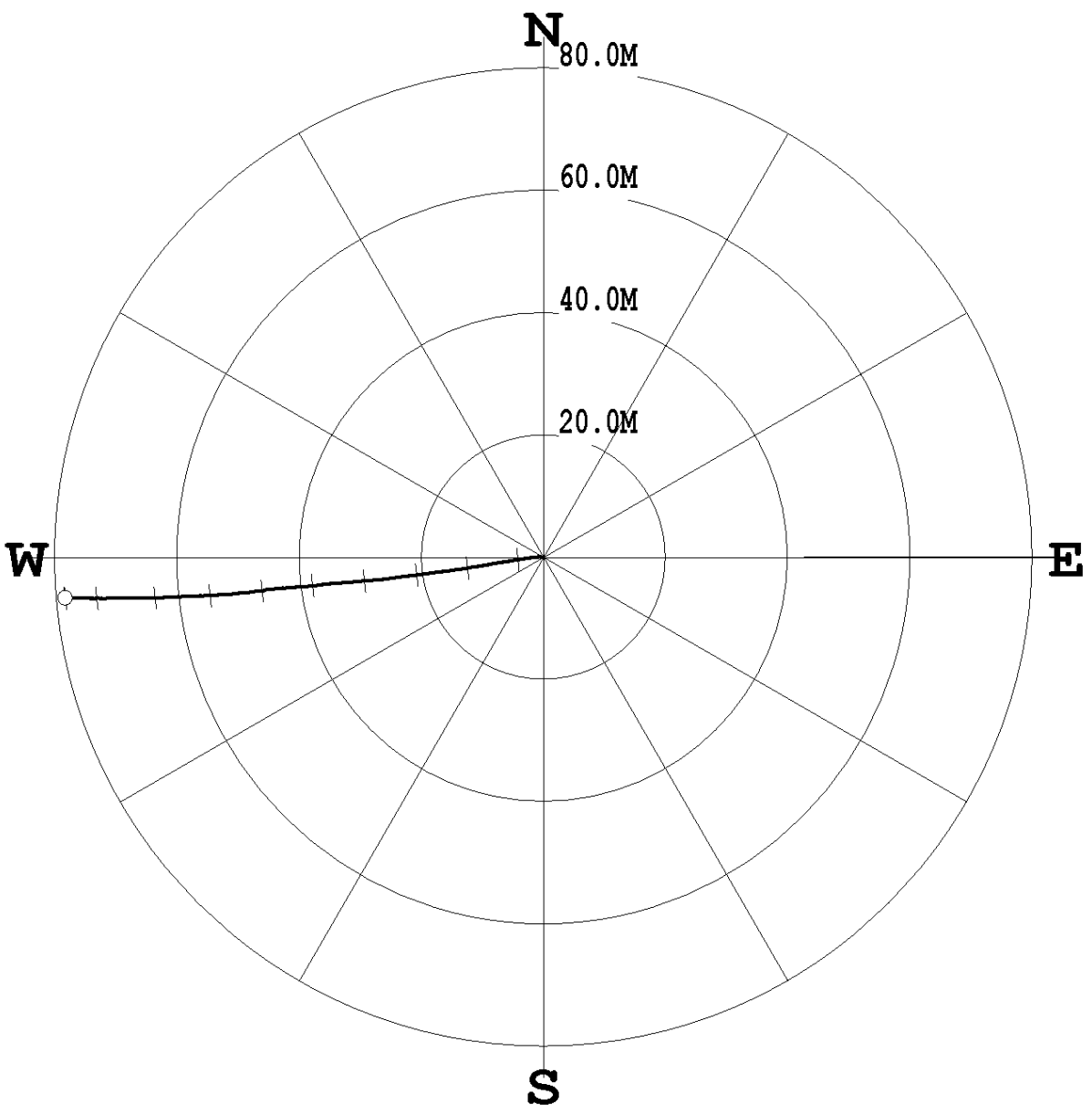
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-01B
DATE OF LOG: 09/14/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 10 M/CM
TRUE DEPTH: 105.12 M
AZIMUTH: 265.1
DISTANCE: 78.5 M
+ = 10 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
HOLE ID. : CM12-01B
FIELD OFFICE : CENTURY GEO
DATE OF LOG : 09/14/12
DATA FROM : N/A
PROBE : 9055A , 59
MAG. DECL. : 15.300
DEPTH UNITS : METERS
LOG: CM12-01B_09-14-12_12-47_9055A_.02_15.00_135.12_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
15.00	15.00	-0.01	-0.00	0.0	193.6	37.2	193.6
16.00	15.75	0.09	-0.64	0.7	277.7	41.1	272.2
17.00	16.51	0.04	-1.30	1.3	271.8	40.5	265.4
18.00	17.27	-0.04	-1.94	1.9	268.8	40.1	260.2
19.00	18.03	-0.13	-2.58	2.6	267.1	39.8	263.8
20.00	18.80	-0.21	-3.21	3.2	266.3	40.5	262.8
21.00	19.56	-0.31	-3.85	3.9	265.4	40.4	261.1
22.00	20.32	-0.44	-4.49	4.5	264.5	40.3	258.8
23.00	21.08	-0.54	-5.12	5.2	264.0	40.1	262.0
24.00	21.84	-0.64	-5.76	5.8	263.6	40.4	263.7
25.00	22.61	-0.74	-6.40	6.4	263.4	40.2	259.1
26.00	23.37	-0.84	-7.04	7.1	263.2	40.0	261.4
27.00	24.14	-0.94	-7.67	7.7	263.0	39.5	253.8
28.00	24.91	-1.04	-8.30	8.4	262.9	38.8	259.5
29.00	25.68	-1.16	-8.93	9.0	262.6	39.5	256.0
30.00	26.45	-1.28	-9.56	9.6	262.4	40.0	261.7
31.00	27.21	-1.39	-10.19	10.3	262.2	39.9	258.4
32.00	27.98	-1.48	-10.82	10.9	262.2	40.0	261.6
33.00	28.75	-1.57	-11.46	11.6	262.2	40.3	263.9
34.00	29.52	-1.66	-12.08	12.2	262.2	36.4	264.6
35.00	30.29	-1.80	-12.68	12.8	261.9	40.4	261.9
36.00	31.05	-1.90	-13.32	13.5	261.9	39.9	262.4
37.00	31.82	-1.98	-13.95	14.1	261.9	39.9	268.5
38.00	32.59	-2.08	-14.58	14.7	261.9	37.7	251.7
39.00	33.35	-2.17	-15.22	15.4	261.9	40.0	260.4
40.00	34.12	-2.25	-15.86	16.0	261.9	40.1	264.5
41.00	34.88	-2.33	-16.49	16.7	262.0	41.3	268.7
42.00	35.65	-2.40	-17.14	17.3	262.0	40.1	262.5
43.00	36.41	-2.49	-17.76	17.9	262.0	40.6	267.7
44.00	37.19	-2.56	-18.38	18.6	262.1	40.4	259.2
45.00	37.95	-2.66	-19.02	19.2	262.0	40.7	264.6
46.00	38.71	-2.74	-19.66	19.9	262.1	41.1	260.2
47.00	39.47	-2.81	-20.31	20.5	262.1	40.8	264.9
48.00	40.23	-2.91	-20.95	21.2	262.1	40.5	260.6
49.00	40.98	-2.98	-21.60	21.8	262.2	40.5	261.7
50.00	41.74	-3.05	-22.25	22.5	262.2	39.8	273.5
51.00	42.51	-3.12	-22.89	23.1	262.2	40.4	261.7
52.00	43.27	-3.23	-23.53	23.7	262.2	40.7	262.0
53.00	44.02	-3.31	-24.17	24.4	262.2	41.0	264.4
54.00	44.78	-3.41	-24.82	25.1	262.2	41.1	268.2
55.00	45.53	-3.48	-25.47	25.7	262.2	39.8	261.2
56.00	46.29	-3.56	-26.11	26.4	262.2	41.1	262.4
57.00	47.04	-3.66	-26.76	27.0	262.2	41.3	268.0
58.00	47.79	-3.70	-27.41	27.7	262.3	39.7	271.7
59.00	48.54	-3.75	-28.07	28.3	262.4	41.7	268.7
60.00	49.29	-3.80	-28.73	29.0	262.5	40.9	262.9
61.00	50.05	-3.85	-29.37	29.6	262.5	41.2	266.4
62.00	50.80	-3.91	-30.03	30.3	262.6	41.3	264.8
63.00	51.55	-3.96	-30.68	30.9	262.7	41.4	266.1
64.00	52.30	-4.03	-31.34	31.6	262.7	41.3	266.3
65.00	53.06	-4.07	-31.99	32.3	262.7	41.1	263.1
66.00	53.82	-4.13	-32.64	32.9	262.8	40.2	259.5
67.00	54.58	-4.19	-33.29	33.5	262.8	40.7	265.9
68.00	55.33	-4.23	-33.94	34.2	262.9	41.0	272.2
69.00	56.10	-4.28	-34.58	34.8	262.9	40.2	265.2
70.00	56.86	-4.34	-35.22	35.5	263.0	40.1	265.5
71.00	57.62	-4.40	-35.87	36.1	263.0	40.6	265.1
72.00	58.38	-4.55	-36.46	36.7	262.9	41.1	263.3
73.00	59.14	-4.60	-37.11	37.4	262.9	41.0	259.3
74.00	59.91	-4.62	-37.73	38.0	263.0	40.2	256.2
75.00	60.68	-4.72	-38.36	38.6	263.0	38.0	262.1
76.00	61.43	-4.78	-39.00	39.3	263.0	40.7	261.9
77.00	62.19	-4.81	-39.66	39.9	263.1	40.8	265.7
78.00	62.94	-4.85	-40.31	40.6	263.1	40.4	267.9
79.00	63.70	-4.90	-40.96	41.2	263.2	40.8	261.2
80.00	64.46	-4.96	-41.60	41.9	263.2	40.9	266.4
81.00	65.22	-5.00	-42.25	42.5	263.2	42.2	271.5
82.00	65.98	-5.04	-42.90	43.2	263.3	40.3	265.4
83.00	66.74	-5.08	-43.54	43.8	263.3	41.0	268.3
84.00	67.50	-5.18	-44.17	44.5	263.3	40.6	259.3
85.00	68.25	-5.19	-44.83	45.1	263.4	40.0	261.0
86.00	69.01	-5.28	-45.39	45.7	263.4	39.2	252.5
87.00	69.79	-5.46	-45.87	46.2	263.2	38.5	263.3
88.00	70.55	-5.51	-46.52	46.8	263.2	41.3	265.2
89.00	71.30	-5.58	-47.17	47.5	263.3	40.8	264.8
90.00	72.06	-5.69	-47.80	48.1	263.2	40.9	265.4
91.00	72.81	-5.74	-48.45	48.8	263.2	41.1	265.0
92.00	73.57	-5.79	-49.11	49.4	263.3	40.9	267.4
93.00	74.33	-5.82	-49.74	50.1	263.3	40.2	274.8
94.00	75.09	-5.93	-50.26	50.6	263.3	41.2	263.7
95.00	75.84	-5.99	-50.92	51.3	263.3	41.3	266.5
96.00	76.59	-6.03	-51.58	51.9	263.3	40.8	268.1
97.00	77.34	-6.07	-52.23	52.6	263.4	40.1	276.4
98.00	78.09	-6.12	-52.89	53.2	263.4	41.3	267.1
99.00	78.84	-6.16	-53.55	53.9	263.4	41.9	267.5
100.00	79.59	-6.21	-54.20	54.6	263.5	41.4	265.2
101.00	80.34	-6.23	-54.86	55.2	263.5	41.4	265.8
102.00	81.09	-6.27	-55.53	55.9	263.6	41.7	265.7
103.00	81.84	-6.28	-56.18	56.5	263.6	41.0	276.5
104.00	82.59	-6.30	-56.84	57.2	263.7	41.7	267.2
105.00	83.34	-6.33	-57.51	57.9	263.7	41.6	264.1
106.00	84.09	-6.38	-58.16	58.5	263.7	41.8	266.7
107.00	84.83	-6.40	-58.83	59.2	263.8	42.0	267.2
108.00	85.58	-6.43	-59.50	59.8	263.8	41.8	267.8
109.00	86.33	-6.44	-60.15	60.5	263.9	42.4	267.8
110.00	87.07	-6.47	-60.82	61.2	263.9	42.0	271.1
111.00	87.80	-6.49	-61.50	61.8	264.0	43.2	272.5
112.00	88.54	-6.56	-62.15	62.5	264.0	42.0	272.7
113.00	89.27	-6.58	-62.84	63.2	264.0	43.4	267.8
114.00	90.00	-6.61	-63.52	63.9	264.1	43.3	259.0
115.00	90.73	-6.63	-64.20	64.5	264.1	43.5	267.8
116.00	91.45	-6.63	-64.89	65.2	264.2	43.5	264.3
117.00	92.18	-6.62	-65.58	65.9	264.2	43.6	270.5
118.00	92.90	-6.64	-66.26	66.6	264.3	43.5	262.8
119.00	93.62	-6.64	-66.96	67.3	264.3	43.3	270.8
120.00	94.35	-6.64	-67.64	68.0	264.4	43.5	271.0
121.00	95.07	-6.64	-68.34	68.7	264.5	43.6	270.9
122.00	95.79	-6.64	-69.03	69.3	264.5	44.3	270.5
123.00	96.51	-6.64	-69.72	70.0	264.6	44.2	271.2
124.00	97.23	-6.64	-70.41	70.7	264.6	44.1	267.6
125.00	97.96	-6.69	-71.09	71.4	264.6	44.0	269.7
126.00	98.67	-6.72	-71.79	72.1	264.7	43.7	261.2
127.00	99.39	-6.71	-72.48	72.8	264.7	44.4	267.6
128.00	100.10	-6.71	-73.18	73.5	264.8	43.5	266.5
129.00	100.82	-6.70	-73.88	74.2	264.8	44.6	270.0
130.00	101.53	-6.70	-74.58	74.9	264.9	46.0	277.5
131.00	102.23	-6.69	-75.29	75.6	264.9	45.3	273.9
132.00	102.93	-6.68	-76.00	76.3	265.0	45.8	270.1
133.00	103.63	-6.67	-76.71	77.0	265.0	45.6	270.6
134.00	104.33	-6.67	-77.43	77.7	265.1	45.3	269.2
135.00	105.03	-6.66	-78.14	78.4	265.1	45.5	270.9
135.12	105.09	-6.66	-78.20	78.5	265.1	45.6	269.9

Century WIRELINE SERVICES

GAMMA - NEUTRON THROUGH RODS CM12-01B

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-01B
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
DEN-TR
DEN
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:09/14/12	RIG NUMBER	:GED
DEPTH DRILLER	:138.00	LOGGER TD	:133.80
BIT SIZE	:120.65	ARRIVAL TIME	:09:00
LOG TOP	:0.00	DEPARTURE TIME	:14:30
LOG BOTTOM	:133.77	CIRC STOPPED	:N/A
CASING LOGGER	:12.00		
CASING DRILLER	:12.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:AZIMUTH: 250 DEGREES DIP: 50 DEGREES		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

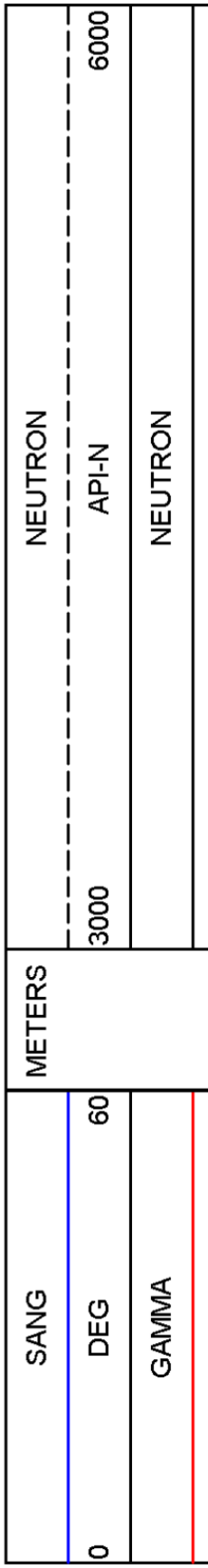
NEUTRON THROUGH RODS 1:100 CM12-01B 09/14/12

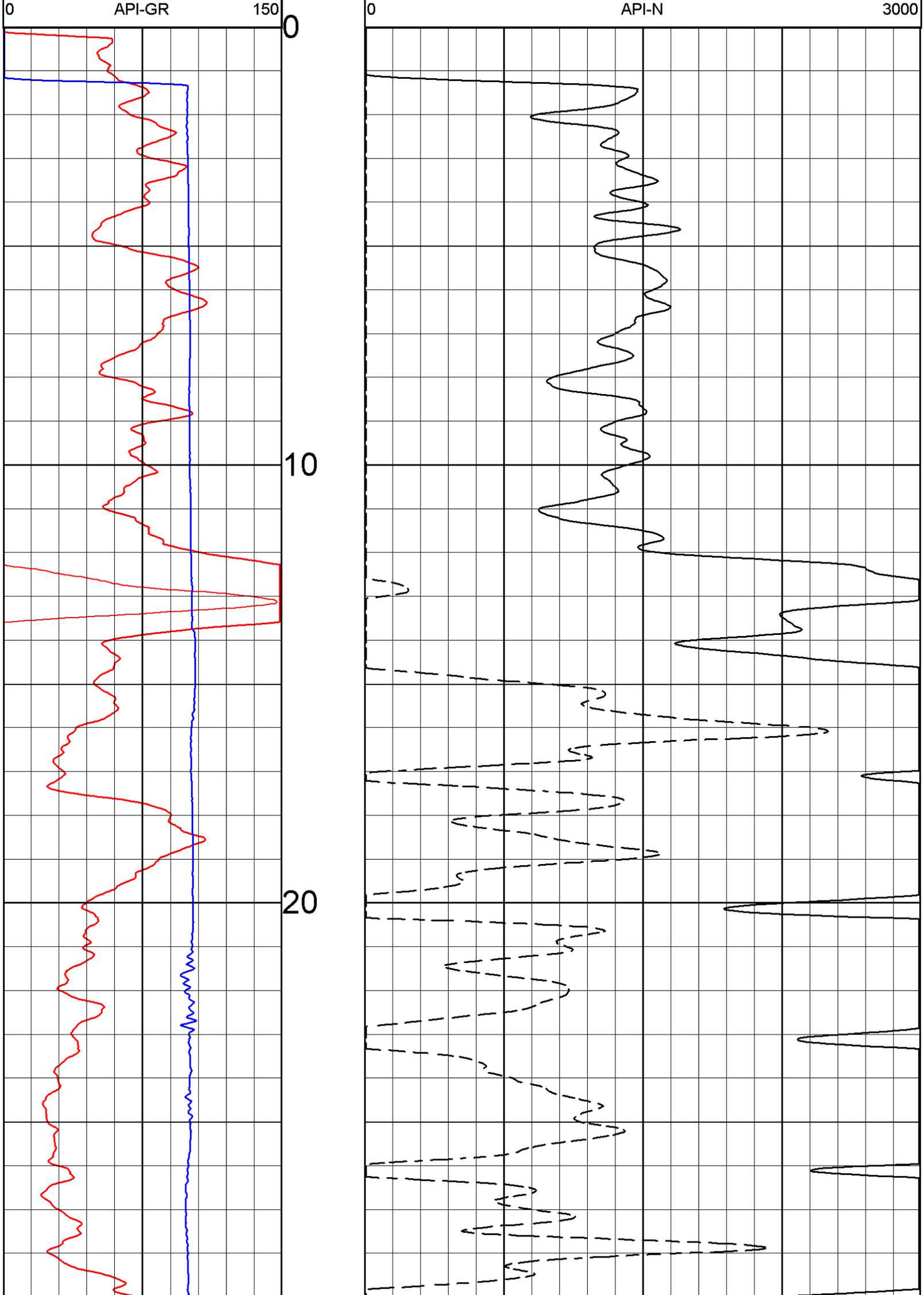
LOG PARAMETERS

MATRIX DENSITY : 2.65
MAGNETIC DECL : 15.3
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/26/2012

NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KF

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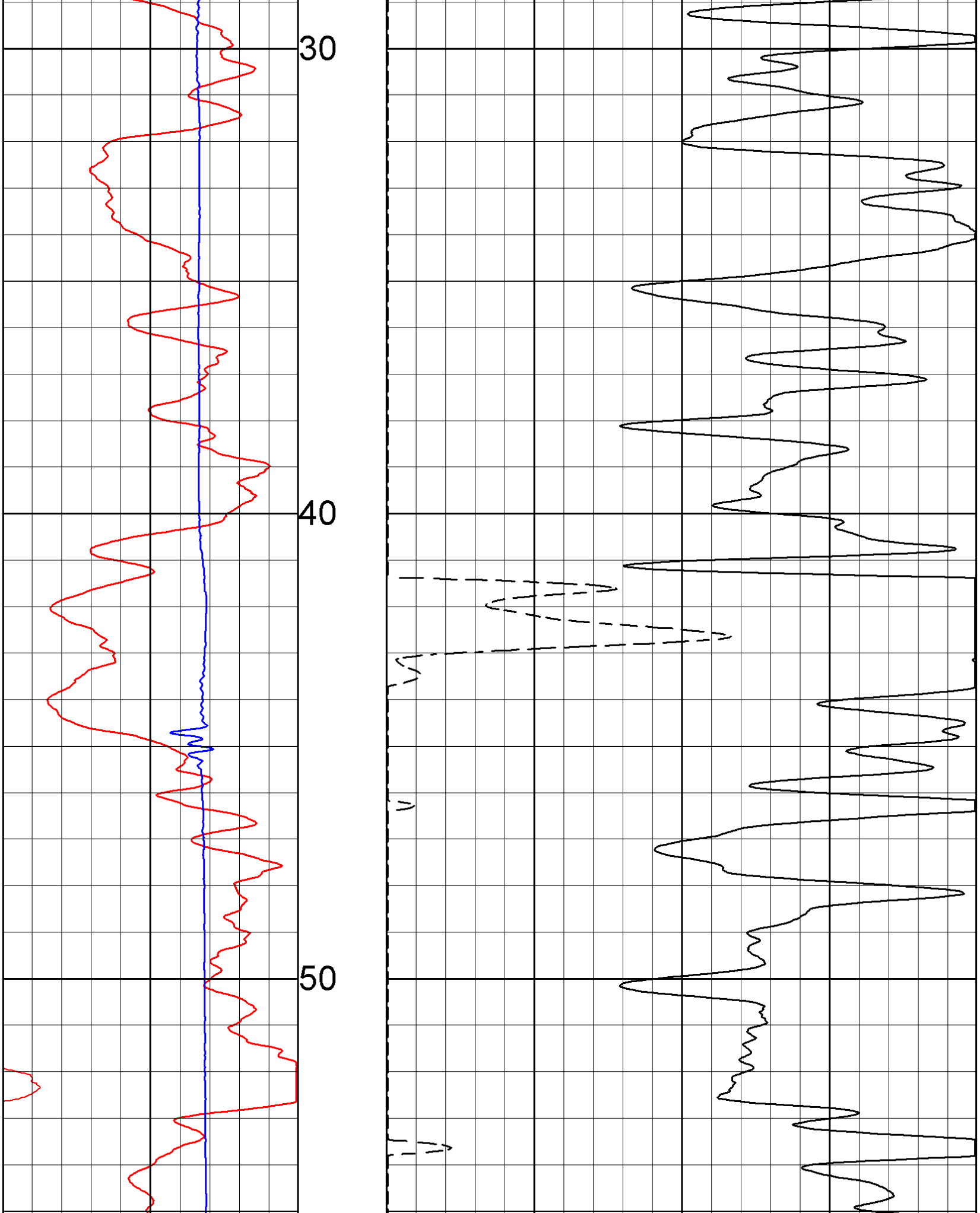
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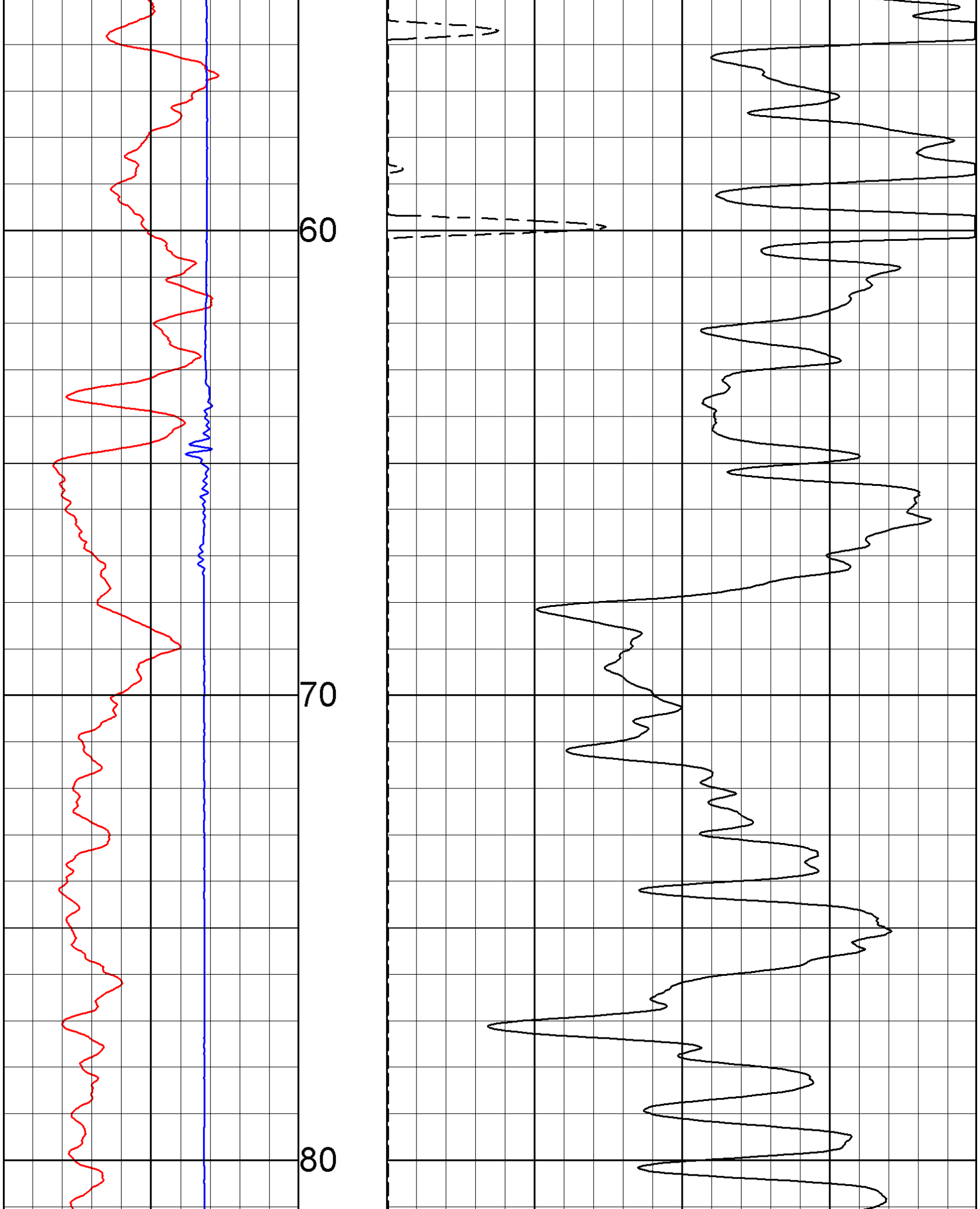
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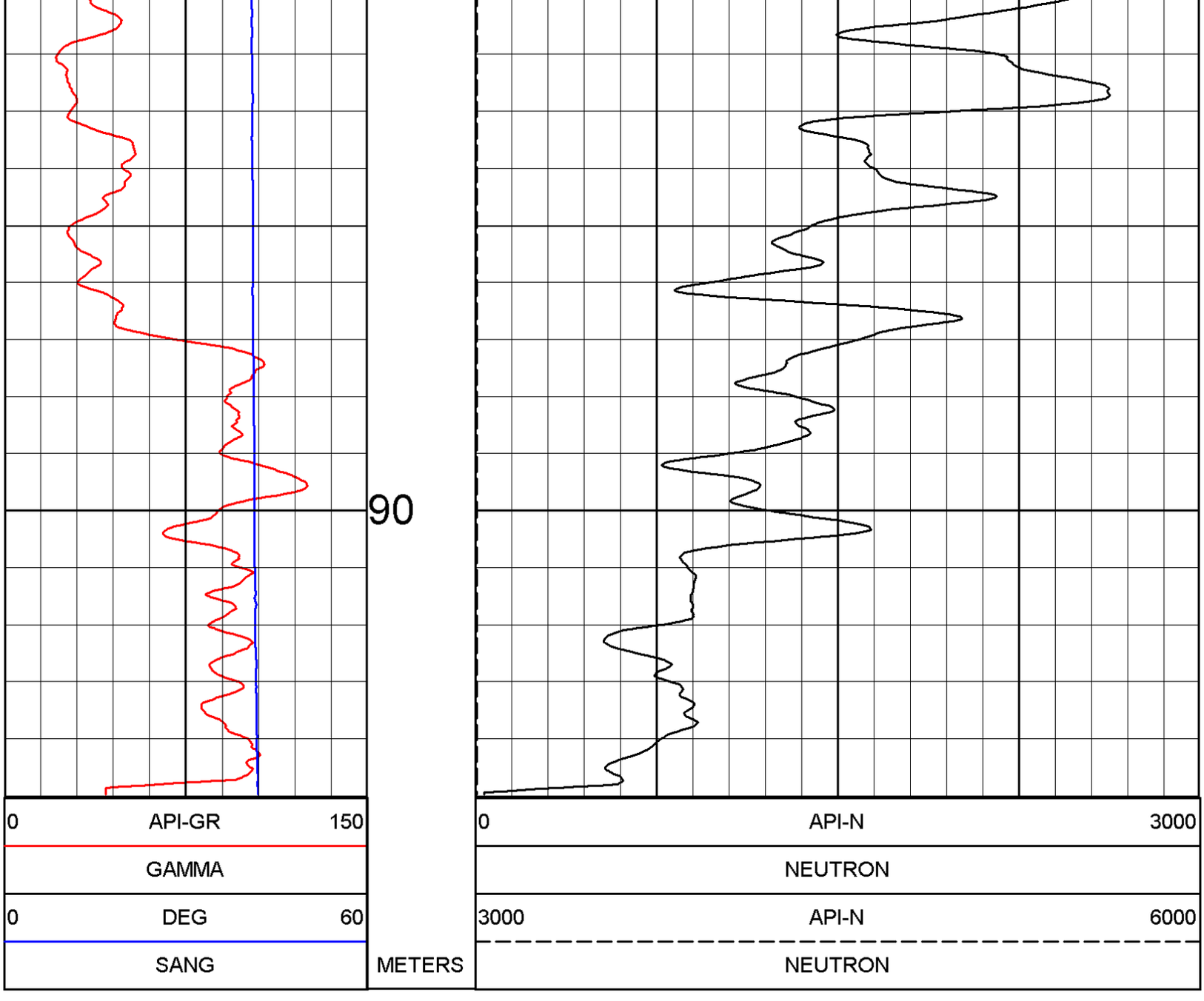


NEUTRON THROUGH RODS 1:100 CM12-01B 09/14/12

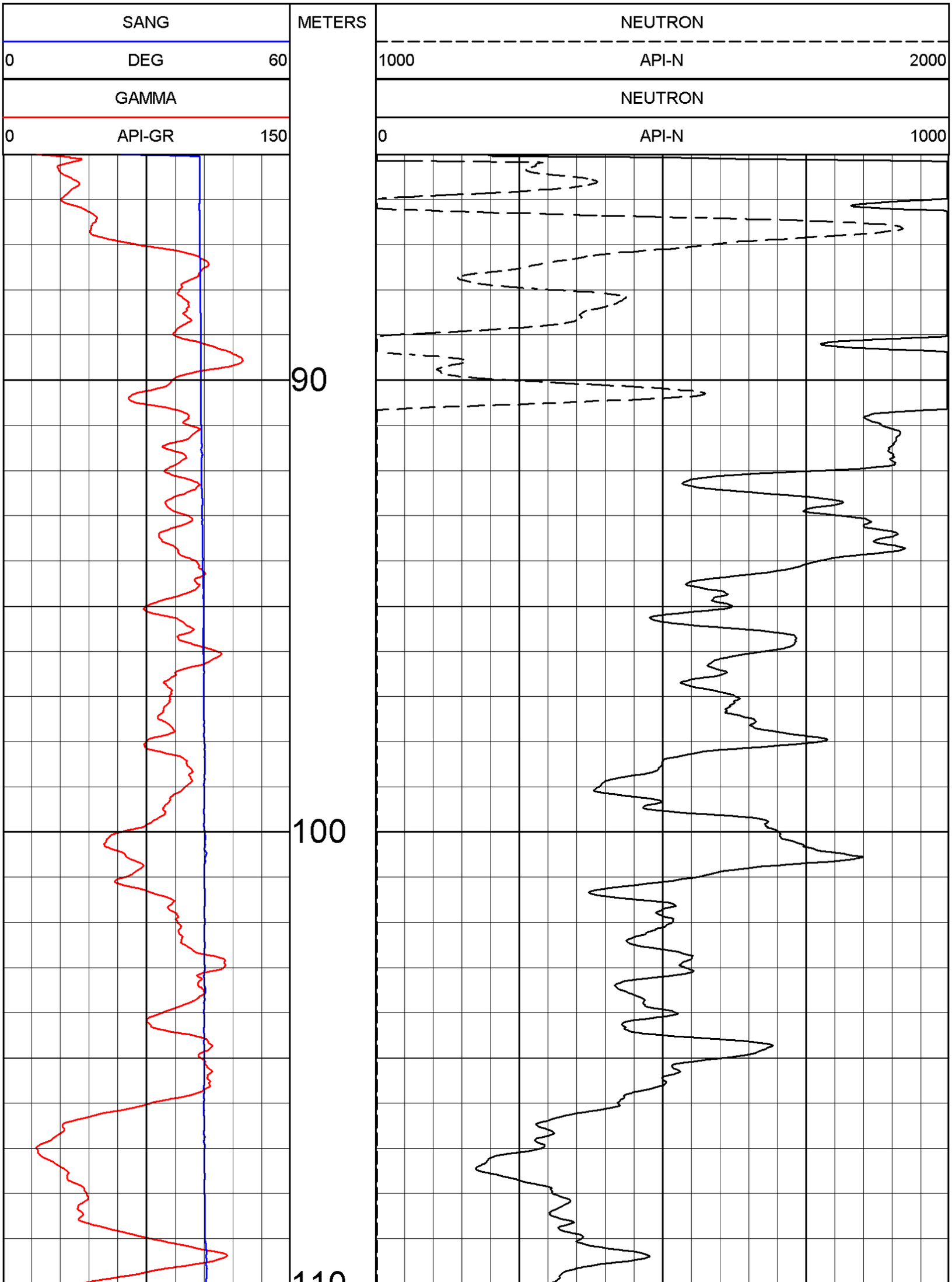
LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/26/2012		VERSION = 3.64KF

NEUTRON THROUGH RODS 1:100 CM12-01B 09/14/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/26/2012		VERSION = 3.64KF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NEUTRON
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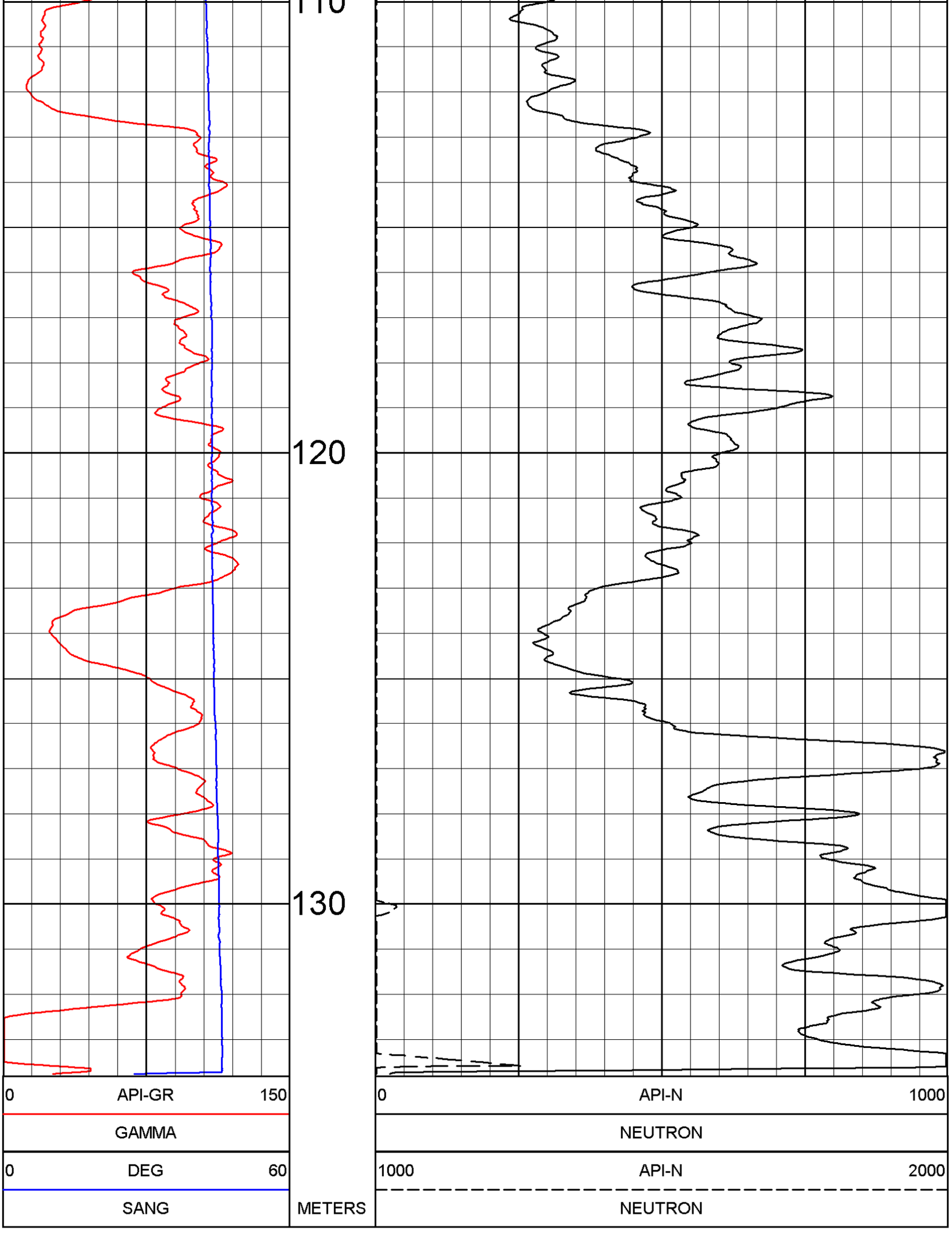
API-N
2000
NEUTRON
0
API-N
1000


110
120
130
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API-GR
150
GAMMA
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60
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METERS
0
API-N
1000
NEUTRON
1000
API-N
2000
NEUTRON

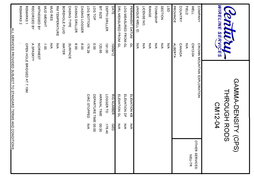
NEUTRON THROUGH RODS 1:100 CM12-01B 09/14/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR.0 08/26/2012		VERSION = 3.64KF

TOOL CALIBRATION CM12-01B 09/14/12 10:50
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

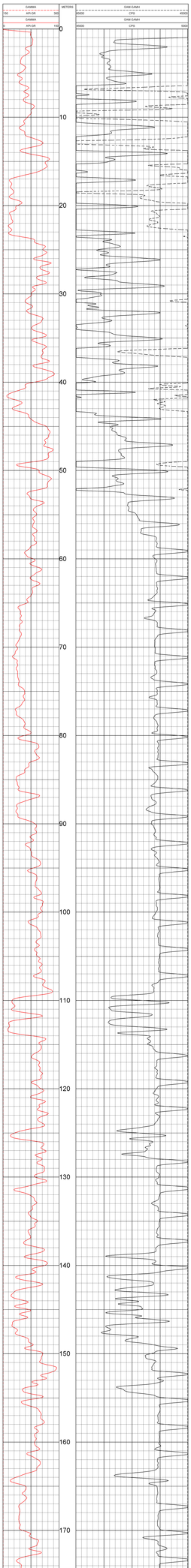
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	POROSIT	Default	[CPS]		
3	May12,08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12,08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04,09	10:40:49	NEUTRON	0.000	[API-N]	1.000	[CPS]
	Dec04,09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]



DENSITY THROUGH RODS 1:100 CM12-04 10/09/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAMEGATE = 2012-CHOWN_DENSITY-TR-3 09/03/2012		VERSION = 3.64AF	



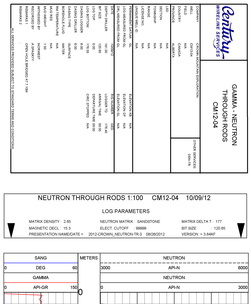
DENSITY THROUGH RODS 1:100 CM12-04 10/09/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAMEGATE = 2012-CHOWN_DENSITY-TR-3 09/03/2012		VERSION = 3.64AF	

TOOL CALIBRATION: CM12-04 10/08/12 01:18
TOOL TYPE: GAMMA DENSITY
SERIAL NUMBER: 8812

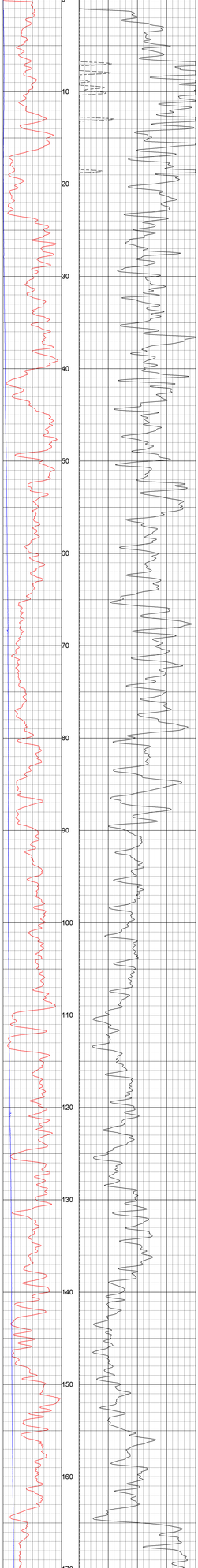
	DATE	TIME	SENSOR	STANDARD	RESPONSE
1	Aug28,12	07:52:32	GAMMA	Default [CPS]	Default [CPS]
	Aug28,12	07:52:32	GAMMA	545.000 [API-GR]	190.000 [CPS]



NEUTRON THROUGH RODS 1:100 CM12-04 10/09/12

LOG PARAMETERS

MATRIX DENSITY 2.65	NEUTRON MATRIX SANDSTONE	MATRIX DELTA T 177
MAGNETIC DECL. 15.5	ELECT. CUTOFF 99999	BIT SIZE 120.65
PRESENTATION NAME/DATE =	20+2 CROWN_NEUTRON.TR 3 09/09/2012	VERSION = 5.64HF



NEUTRON THROUGH RODS 1:100 CM12-04 10/09/12

LOG PARAMETERS

MATRIX DENSITY 2.65	NEUTRON MATRIX SANDSTONE	MATRIX DELTA T 177
MAGNETIC DECL. 15.5	ELECT. CUTOFF 99999	BIT SIZE 120.65
PRESENTATION NAME/DATE =	20+2 CROWN_NEUTRON.TR 3 09/09/2012	VERSION = 5.64HF

TOOL CALIBRATION: CM12-04 10/09/12 01:59
TOOL SERIAL TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD	RESPONSE	
	Aug02,12	04:09:25	GAMMA	Default	Default	[CPS]
1	Aug02,12	04:09:25	NEUTRON	1 PT [GR]	402.000	[CPS]
2	Oct15,07	08:00:58	PORCOR	Default		[CPS]
3	May12,08	08:20:59	RES	0.000	EHM [ ]	9676.000	[CPS]
	May12,08	08:20:59	SP	0.000	MV [ ]	0.000	[CPS]
4	May12,08	08:25:52	SP	0.000	MV [ ]	10.000	[CPS]
	May12,08	08:25:52	SP	382.000	MV [ ]	3462.000	[CPS]
5	Oct04,09	10:40:49	NEUTRON	0.000	API-N [ ]	1.000	[CPS]
	Oct04,09	10:40:49	NEUTRC	271.000	API-N [ ]	50.000	[CPS]
6	Oct15,07	08:00:58	TEMP	0.000	[CPS]	0.000	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-06

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-06
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:10/10/12	RIG NUMBER	:GED
DEPTH DRILLER	:175.50	LOGGER TD	:175.50
BIT SIZE	:120.65	ARRIVAL TIME	:08:30
LOG TOP	:0.00	DEPARTURE TIME	:16:00
LOG BOTTOM	:171.68	CIRC STOPPED	:N/A
CASING LOGGER	:15.30		
CASING DRILLER	:15.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:AZIMUTH: 250 DEGREES DIP: 50 DEGREES		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

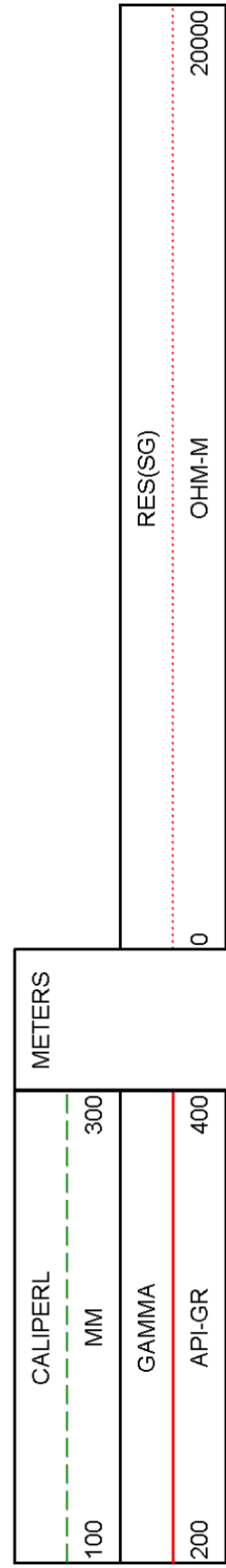
DENSITY 1:100 CM12-06 10/10/12

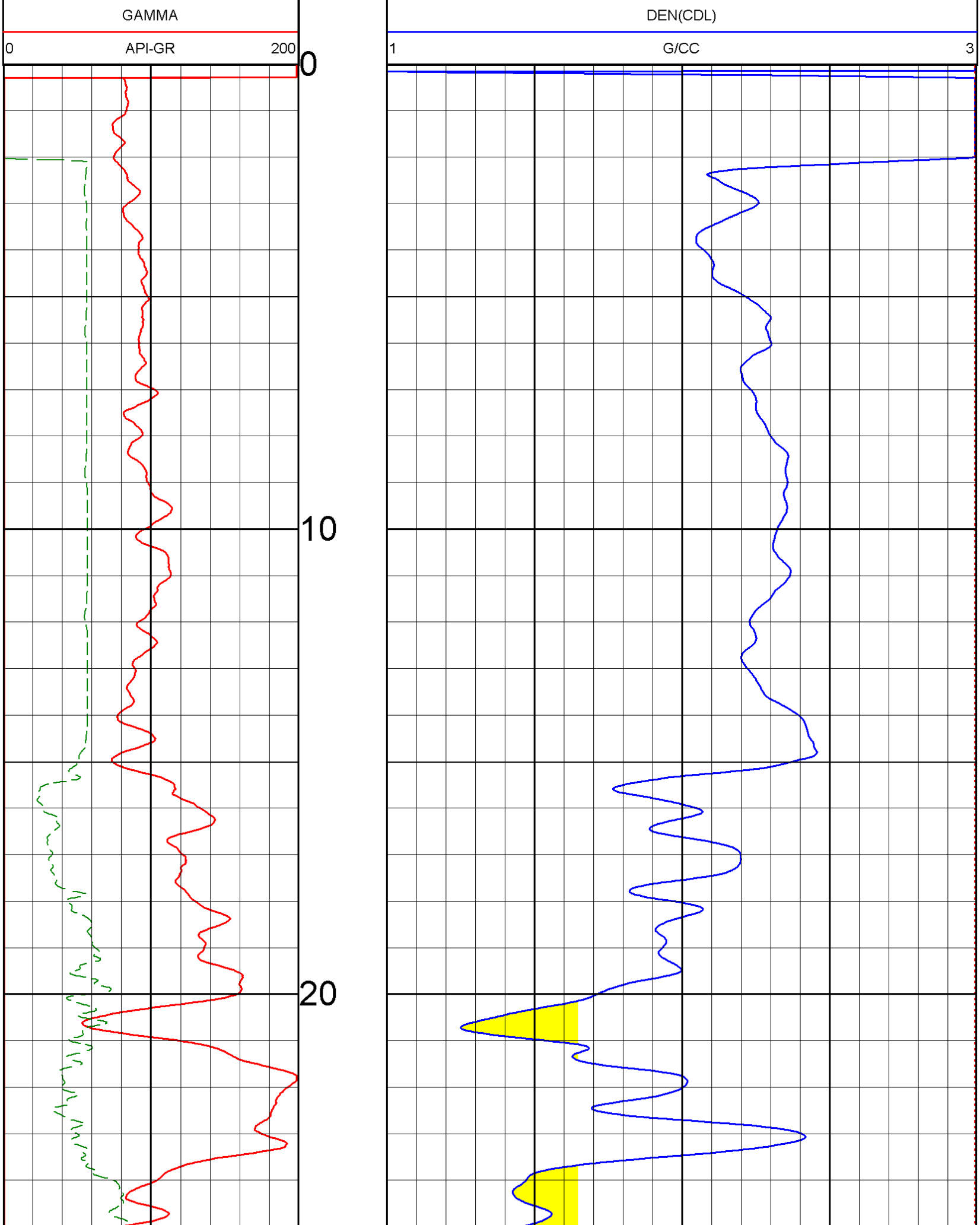
LOG PARAMETERS

MATRIX DENSITY : 2.65
MAGNETIC DECL : 15.3
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012

NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KF

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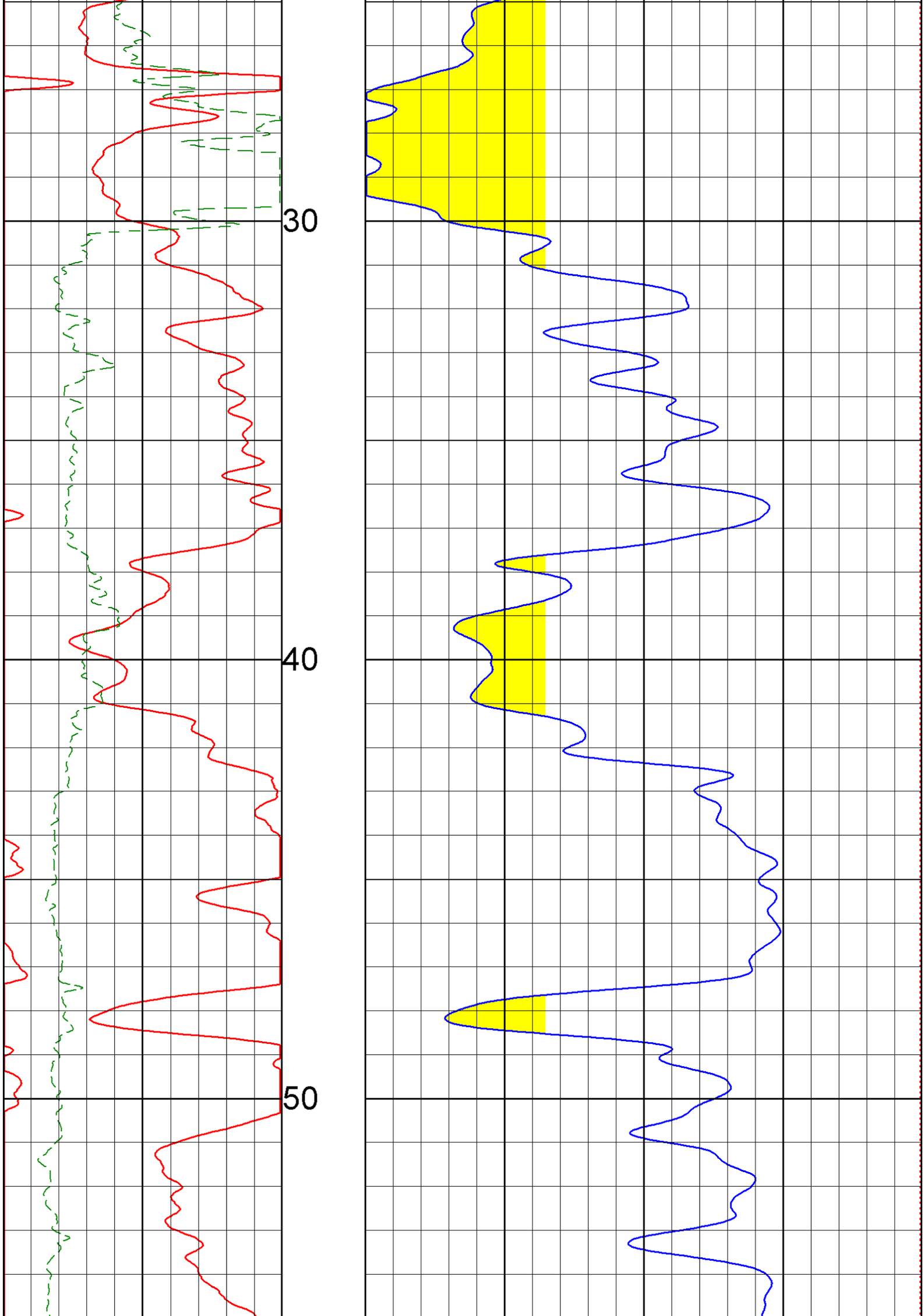
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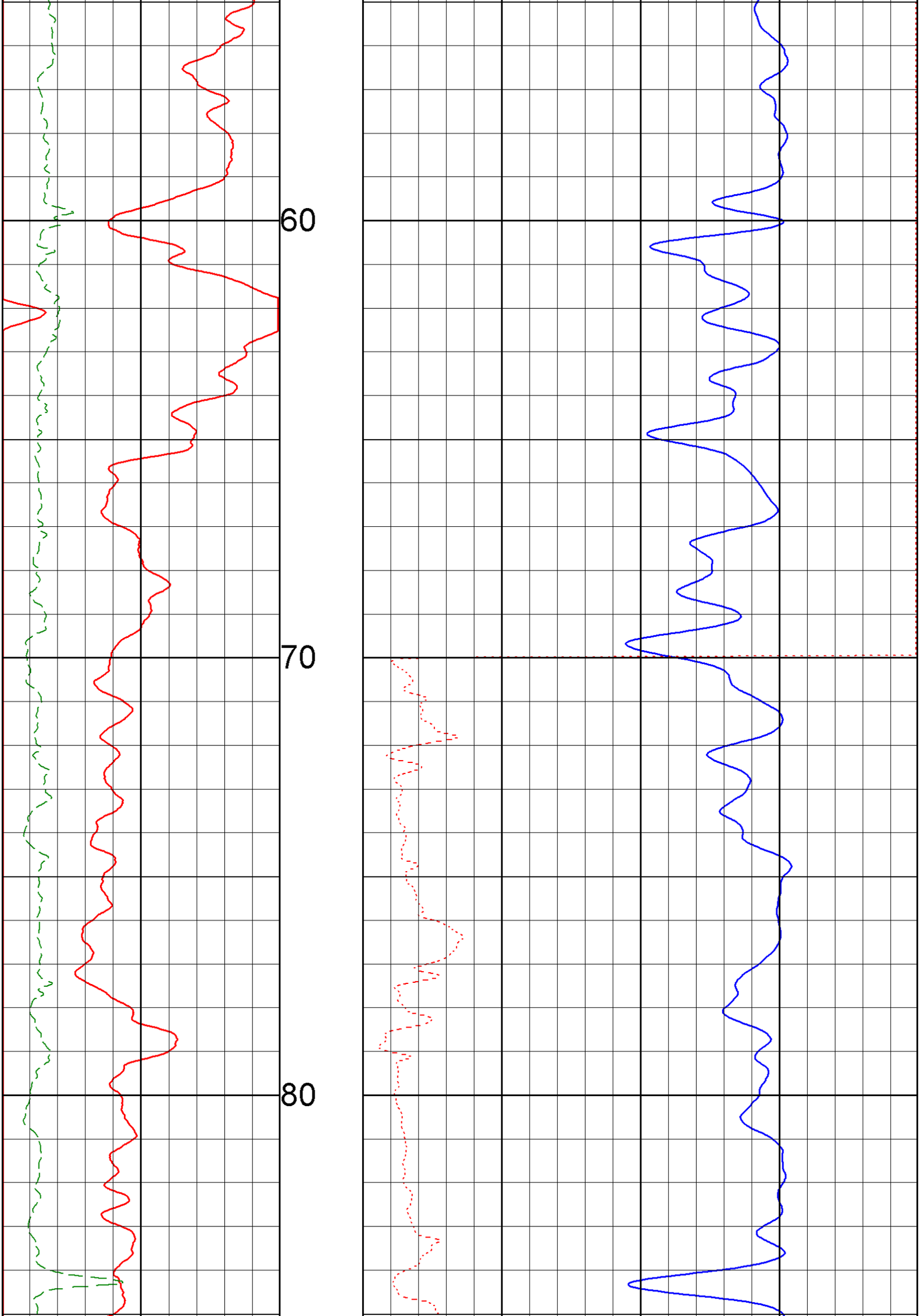
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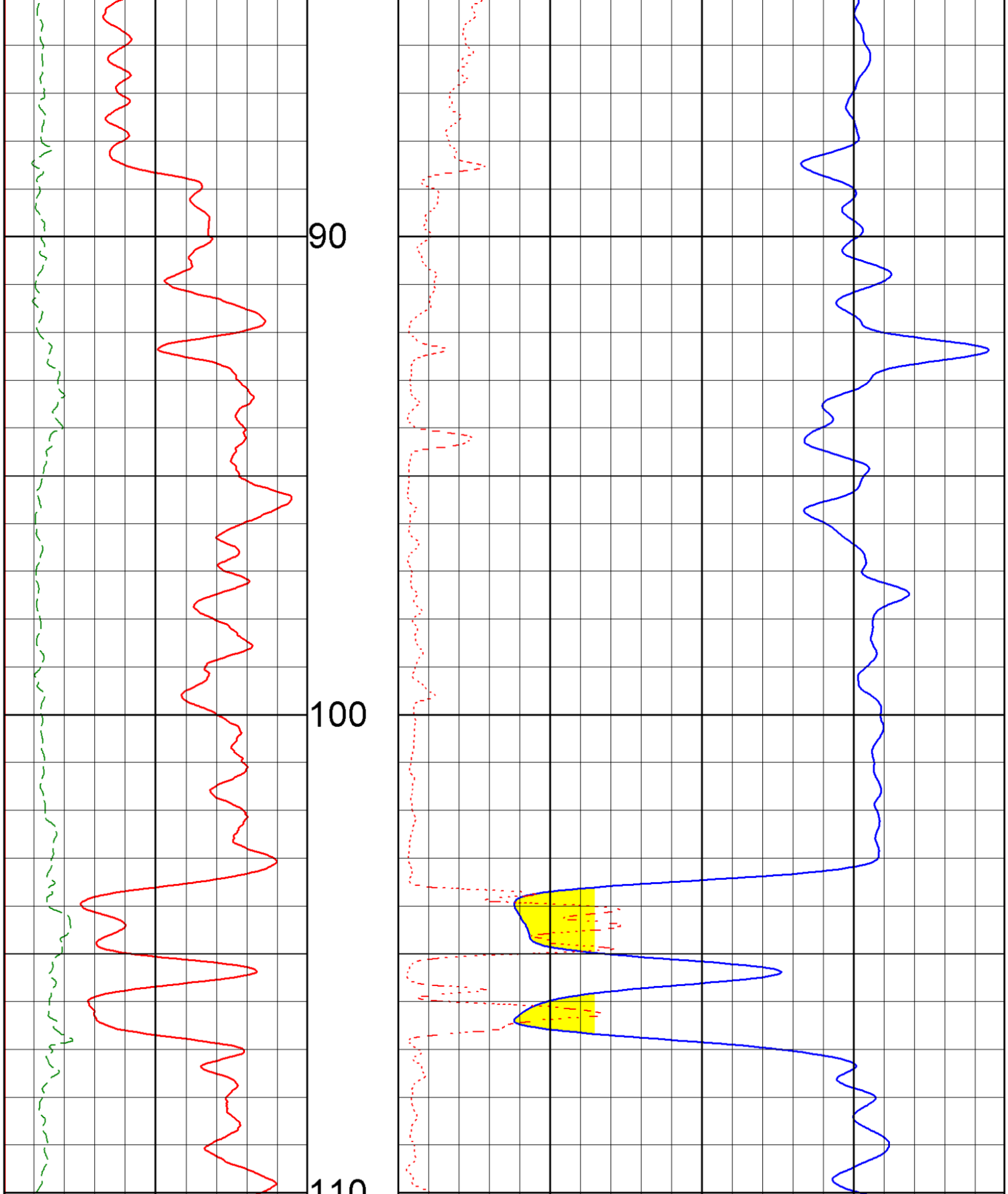
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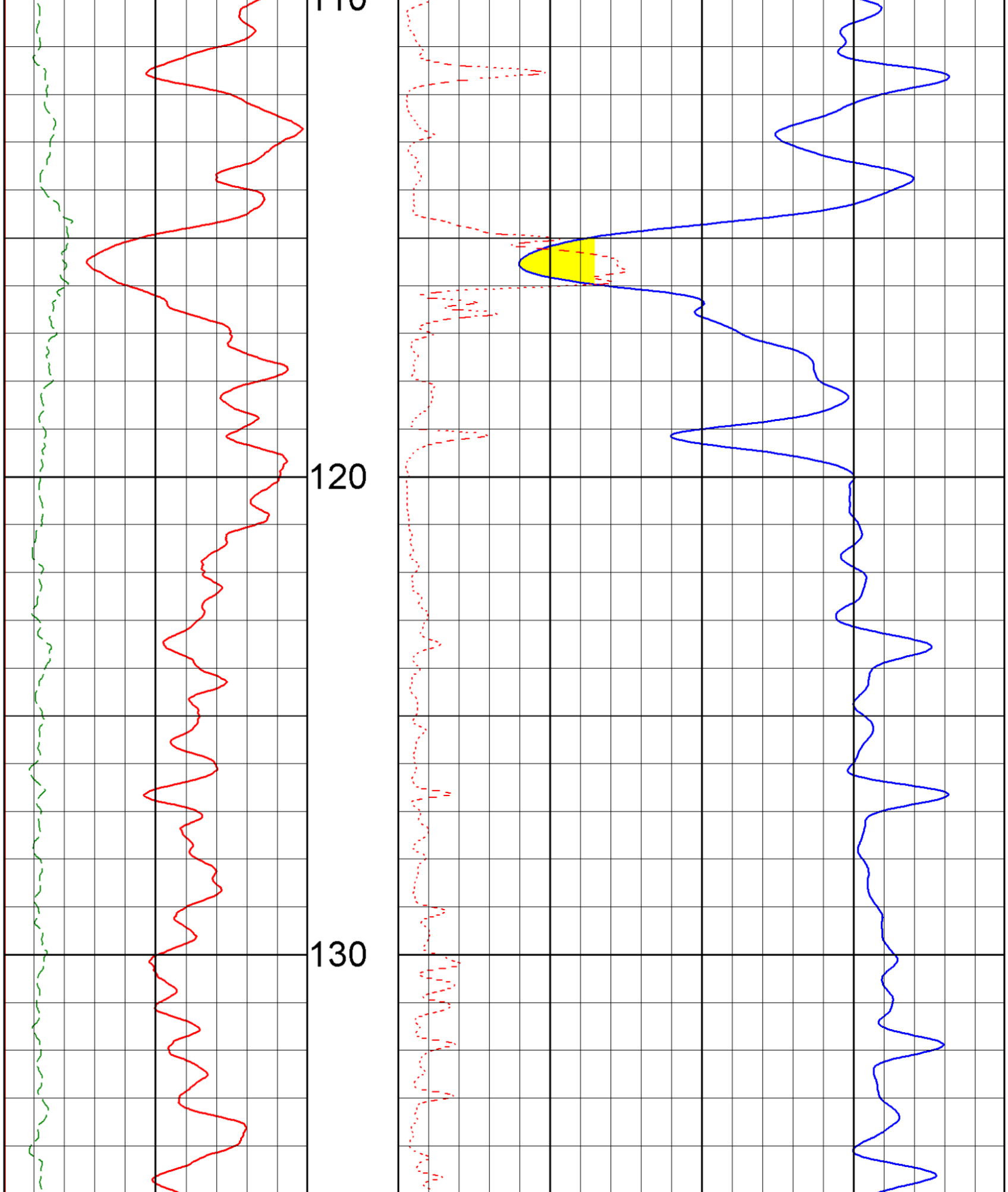
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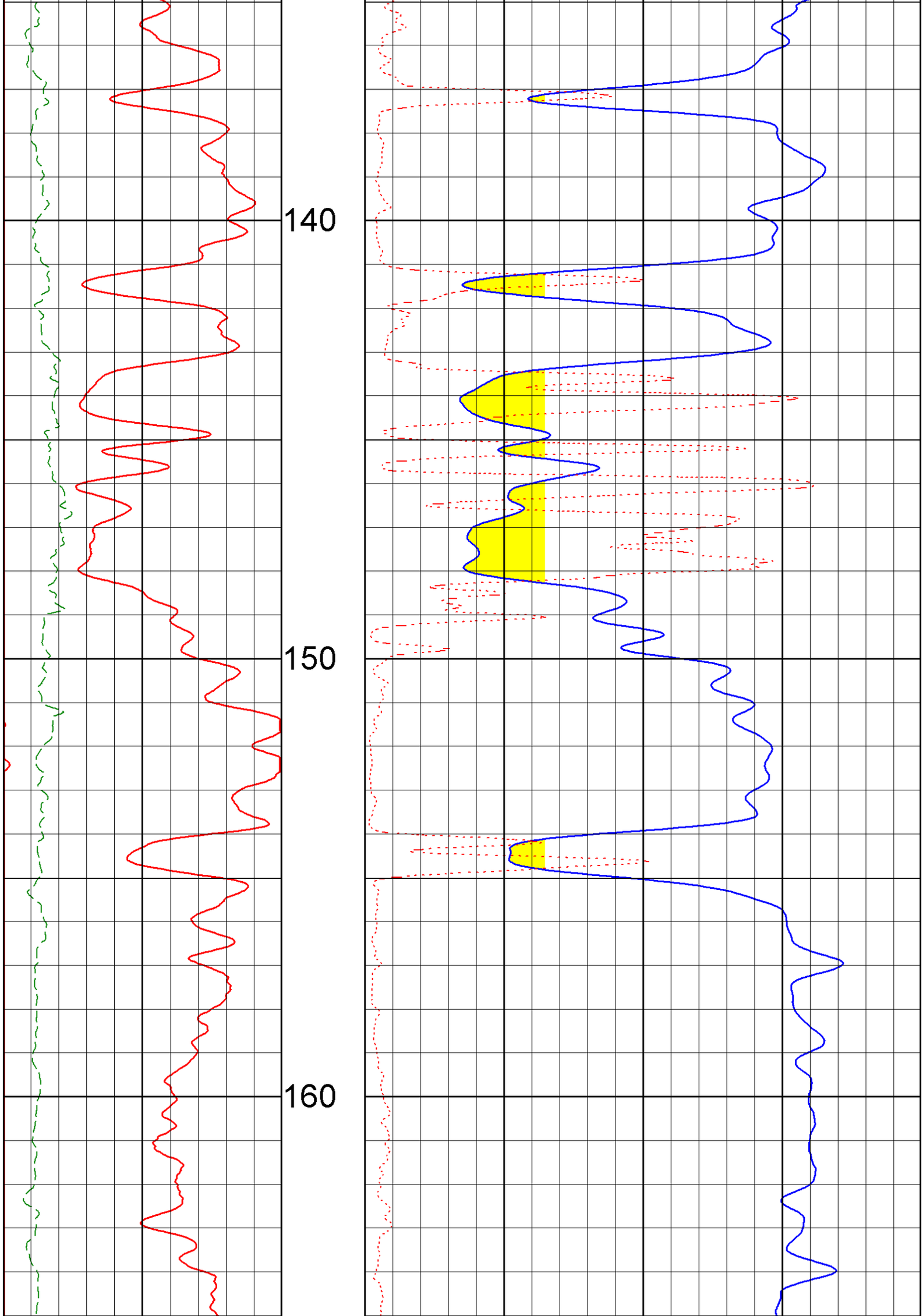
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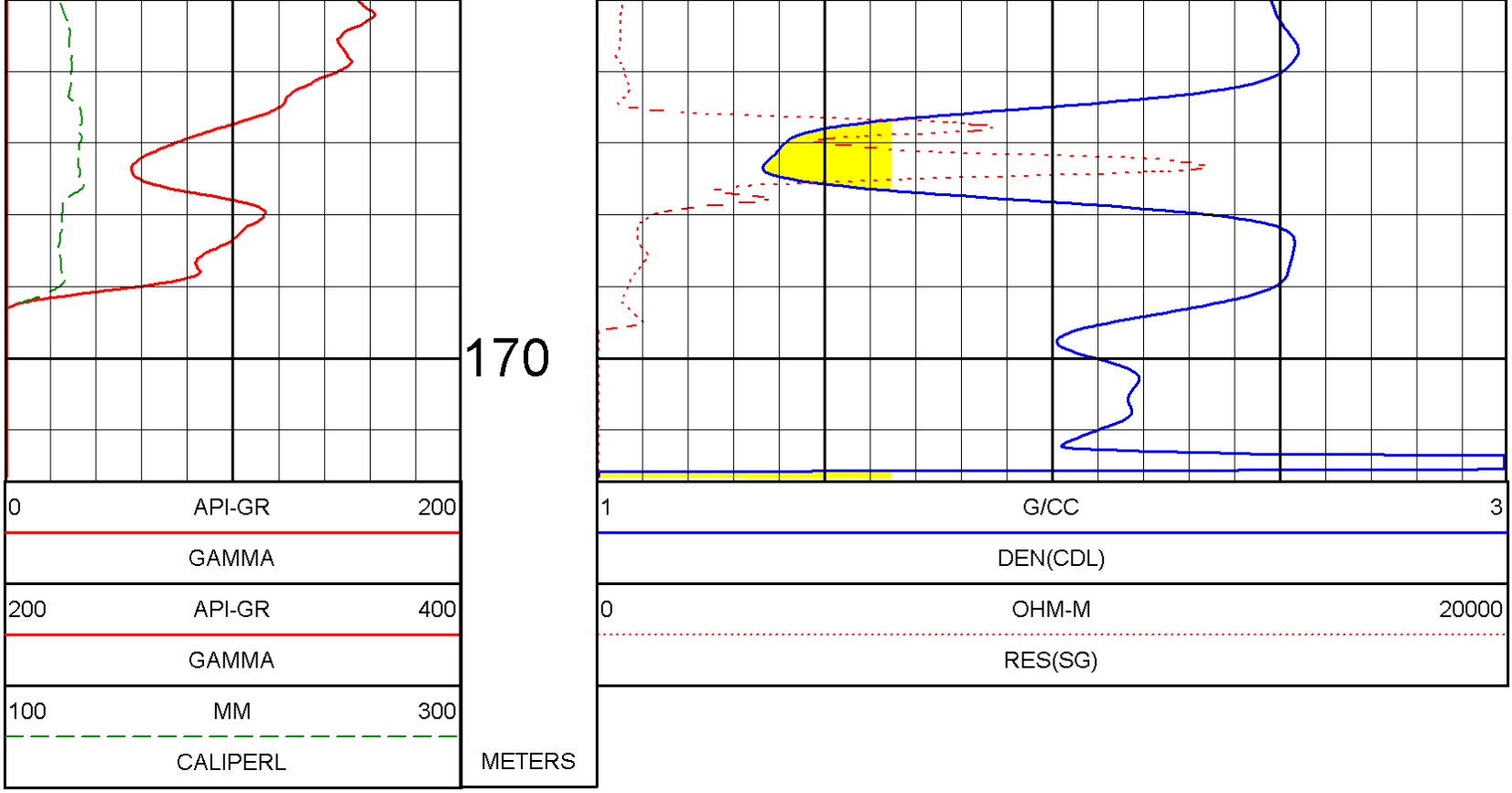


DENSITY 1:100 CM12-06 10/10/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM12-06 10/10/12 14:42
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

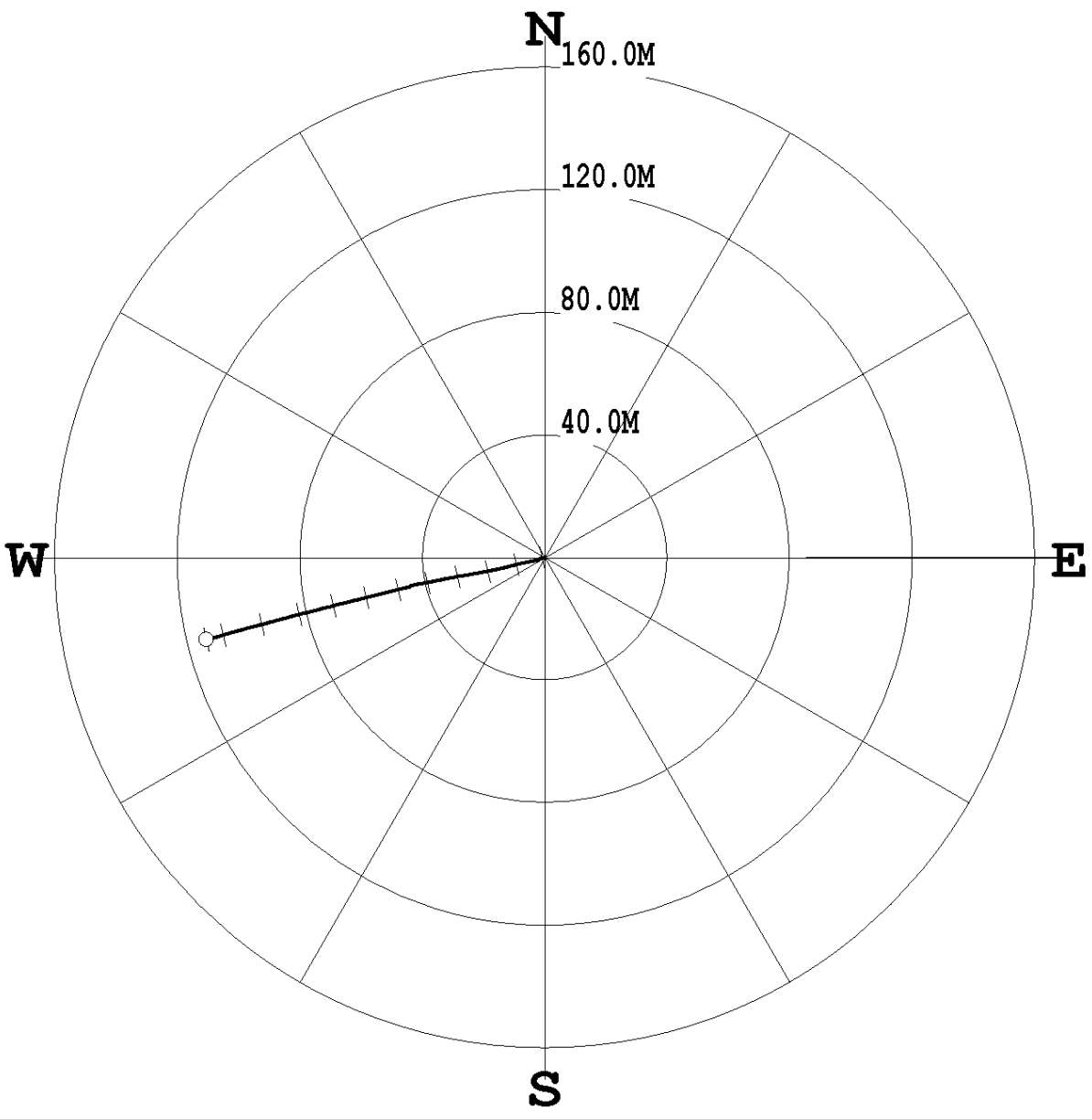
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-06
DATE OF LOG: 10/10/12
PROBE: 9055A 59

MAG DECL: 15.3

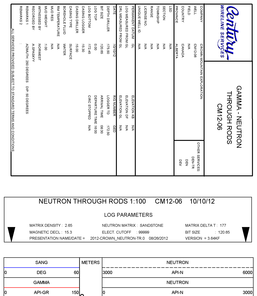
SCALE: 20 M/CM
TRUE DEPTH: 124.36 M
AZIMUTH: 256.4
DISTANCE: 113.7 M
\+ = 10 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM12-06
FIELD OFFICE : CENTURY GEO DATE OF LOG : 10/10/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 15.3 DEPTH UNITS : METERS
LOG: CM12-06_10-10-12_13-57_9055A_.02_19.00_175.40_DEVI.log

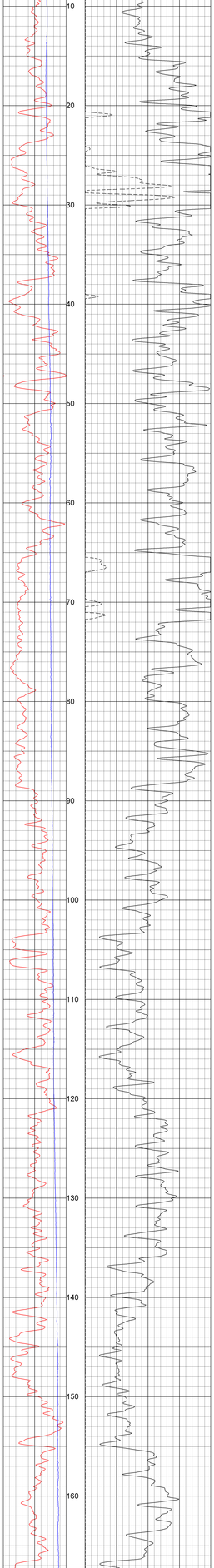
CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
19.04	19.03	-0.00	-0.03	0.0	266.4	39.8	266.4
20.00	19.75	-0.04	-0.66	0.7	266.1	42.0	261.8
21.00	20.49	-0.12	-1.32	1.3	264.9	39.5	250.7
22.00	21.24	-0.40	-1.87	1.9	257.9	38.6	254.0
23.00	21.98	-0.63	-2.25	2.3	254.3	41.9	259.1
24.00	22.72	-0.84	-2.87	3.0	253.7	42.9	241.9
25.00	23.47	-0.99	-3.52	3.7	254.3	41.4	258.2
26.00	24.22	-1.13	-4.15	4.3	254.8	42.5	242.3
27.00	24.96	-1.24	-4.81	5.0	255.5	42.0	259.7
28.00	25.70	-1.37	-5.47	5.6	256.0	41.8	259.6
29.00	26.44	-1.49	-6.14	6.3	256.3	42.1	259.4
30.00	27.17	-1.61	-6.78	7.0	256.6	43.5	270.4
31.00	27.89	-1.75	-7.44	7.6	256.8	42.8	254.3
32.00	28.62	-1.91	-8.11	8.3	256.7	43.2	256.0
33.00	29.35	-2.09	-8.76	9.0	256.6	43.2	256.8
34.00	30.08	-2.24	-9.43	9.7	256.6	44.6	253.8
35.00	30.81	-2.41	-10.08	10.4	256.6	43.9	260.3
36.00	31.54	-2.57	-10.75	11.1	256.5	43.3	257.1
37.00	32.27	-2.73	-11.42	11.7	256.6	43.3	254.2
38.00	33.00	-2.91	-12.07	12.4	256.4	44.4	259.4
39.00	33.72	-3.06	-12.74	13.1	256.5	44.0	258.6
40.00	34.45	-3.26	-13.39	13.8	256.3	44.6	256.6
41.00	35.17	-3.41	-14.07	14.5	256.4	45.1	247.1
42.00	35.89	-3.57	-14.74	15.2	256.4	44.1	260.5
43.00	36.60	-3.68	-15.43	15.9	256.6	44.5	260.3
44.00	37.33	-3.88	-16.08	16.5	256.4	45.2	259.0
45.00	38.03	-3.98	-16.78	17.2	256.7	47.7	271.4
46.00	38.75	-4.14	-17.46	17.9	256.7	43.7	252.3
47.00	39.46	-4.29	-18.15	18.6	256.7	45.8	261.9
48.00	40.16	-4.41	-18.85	19.4	256.8	45.4	257.0
49.00	40.87	-4.55	-19.54	20.1	256.9	46.6	268.1
50.00	41.58	-4.66	-20.21	20.7	257.0	44.3	265.6
51.00	42.28	-4.77	-20.92	21.5	257.1	45.6	253.4
52.00	42.99	-4.91	-21.61	22.2	257.2	44.9	247.5
53.00	43.69	-5.05	-22.31	22.9	257.2	45.1	262.9
54.00	44.39	-5.20	-23.00	23.6	257.3	45.8	263.1
55.00	45.08	-5.30	-23.71	24.3	257.4	45.9	255.0
56.00	45.78	-5.44	-24.41	25.0	257.4	45.4	260.9
57.00	46.49	-5.55	-25.11	25.7	257.5	45.3	262.0
58.00	47.19	-5.67	-25.81	26.4	257.6	44.7	260.5
59.00	47.89	-5.78	-26.51	27.1	257.7	45.9	270.9
60.00	48.60	-5.86	-27.22	27.8	257.8	45.3	262.1
61.00	49.30	-5.99	-27.91	28.5	257.9	45.0	261.8
62.00	50.02	-6.15	-28.58	29.2	257.9	41.4	243.1
63.00	50.74	-6.27	-29.27	29.9	257.9	45.8	271.4
64.00	51.44	-6.39	-29.97	30.6	258.0	44.6	261.2
65.00	52.15	-6.54	-30.66	31.3	258.0	45.6	262.4
66.00	52.85	-6.67	-31.35	32.1	258.0	45.2	260.0
67.00	53.55	-6.76	-32.06	32.8	258.1	45.9	259.5
68.00	54.26	-6.89	-32.75	33.5	258.1	44.5	255.5
69.00	54.96	-7.02	-33.44	34.2	258.1	44.9	248.8
70.00	55.67	-7.22	-34.11	34.9	258.0	44.9	249.5
71.00	56.38	-7.35	-34.81	35.6	258.1	45.3	262.6
72.00	57.08	-7.47	-35.51	36.3	258.1	46.0	269.5
73.00	57.77	-7.65	-36.17	37.0	258.1	45.5	260.3
74.00	58.47	-7.78	-36.87	37.7	258.1	45.2	257.4
75.00	59.17	-7.90	-37.57	38.4	258.1	44.8	261.3
76.00	59.88	-8.06	-38.26	39.1	258.1	45.5	262.7
77.00	60.57	-8.17	-38.97	39.8	258.2	45.2	258.9
78.00	61.26	-8.30	-39.67	40.5	258.2	46.3	254.7
79.00	61.96	-8.42	-40.37	41.2	258.2	46.0	261.5
80.00	62.66	-8.54	-41.08	42.0	258.3	45.8	264.5
81.00	63.35	-8.65	-41.79	42.7	258.3	50.4	266.9
82.00	64.04	-8.77	-42.50	43.4	258.3	44.3	261.2
83.00	64.73	-8.93	-43.17	44.1	258.3	46.7	260.3
84.00	65.43	-9.09	-43.87	44.8	258.3	46.3	246.1
85.00	66.14	-9.46	-44.11	45.1	257.9	37.6	262.5
86.00	66.83	-9.66	-44.78	45.8	257.8	46.3	258.6
87.00	67.53	-9.79	-45.47	46.5	257.8	46.5	256.3
88.00	68.22	-9.95	-46.17	47.2	257.8	46.8	257.2
89.00	68.91	-10.09	-46.89	48.0	257.9	47.6	259.9
90.00	69.60	-10.28	-47.56	48.7	257.8	43.6	248.2
91.00	70.30	-10.45	-48.25	49.4	257.8	46.9	257.8
92.00	70.98	-10.61	-48.96	50.1	257.8	45.7	254.9
93.00	71.67	-10.80	-49.66	50.8	257.7	46.5	256.5
94.00	72.36	-10.97	-50.36	51.5	257.7	47.8	242.9
95.00	73.05	-11.14	-51.06	52.3	257.7	46.2	254.9
96.00	73.74	-11.34	-51.75	53.0	257.6	46.2	254.3
97.00	74.43	-11.50	-52.45	53.7	257.6	46.5	254.5
98.00	75.12	-11.68	-53.16	54.4	257.6	46.7	256.0
99.00	75.80	-11.85	-53.87	55.2	257.6	46.9	251.9
100.00	76.47	-12.04	-54.58	55.9	257.6	47.7	257.5
101.00	77.15	-12.20	-55.30	56.6	257.6	46.2	254.6
102.00	77.81	-12.37	-56.02	57.4	257.5	45.8	260.4
103.00	78.48	-12.56	-56.73	58.1	257.5	47.6	253.3
104.00	79.16	-12.75	-57.44	58.8	257.5	48.5	252.0
105.00	79.83	-12.91	-58.16	59.6	257.5	48.0	258.9
106.00	80.50	-13.07	-58.88	60.3	257.5	48.8	245.7
107.00	81.18	-13.29	-59.58	61.0	257.4	46.0	244.3
108.00	81.86	-13.47	-60.29	61.8	257.4	47.4	258.5
109.00	82.54	-13.65	-60.99	62.5	257.4	48.3	265.0
110.00	83.21	-13.78	-61.71	63.2	257.4	47.6	258.6
111.00	83.88	-13.96	-62.44	64.0	257.4	48.2	256.4
112.00	84.55	-14.17	-63.15	64.7	257.4	47.2	250.5
113.00	85.22	-14.36	-63.86	65.5	257.3	48.6	256.9
114.00	85.89	-14.54	-64.58	66.2	257.3	48.2	257.5
115.00	86.55	-14.70	-65.31	66.9	257.3	49.7	261.5
116.00	87.22	-14.89	-66.03	67.7	257.3	49.1	260.0
117.00	87.88	-15.05	-66.76	68.4	257.3	48.5	258.1
118.00	88.55	-15.17	-67.49	69.2	257.3	49.4	259.2
119.00	89.21	-15.35	-68.21	69.9	257.3	47.6	252.0
120.00	89.88	-15.55	-68.93	70.7	257.3	49.7	260.6
121.00	90.55	-15.80	-69.62	71.4	257.2	50.6	264.3
122.00	91.22	-15.98	-70.33	72.1	257.2	50.9	270.7
123.00	91.88	-16.14	-71.06	72.9	257.2	48.7	253.3
124.00	92.53	-16.32	-71.79	73.6	257.2	48.7	258.3
125.00	93.19	-16.49	-72.53	74.4	257.2	49.9	257.9
126.00	93.84	-16.67	-73.26	75.1	257.2	48.8	254.4
127.00	94.51	-16.90	-73.86	75.8	257.1	49.2	250.0
128.00	95.16	-17.08	-74.59	76.5	257.1	52.7	265.5
129.00	95.80	-17.24	-75.34	77.3	257.1	49.6	244.8
130.00	96.45	-17.46	-76.06	78.0	257.1	50.5	256.6
131.00	97.09	-17.65	-76.80	78.8	257.1	50.6	256.1
132.00	97.72	-17.80	-77.56	79.6	257.1	54.8	257.2
133.00	98.36	-17.98	-78.30	80.3	257.1	48.2	248.7
134.00	98.99	-18.13	-79.06	81.1	257.1	50.8	251.7
135.00	99.62	-18.35	-79.80	81.9	257.1	50.9	250.4
136.00	100.26	-18.53	-80.54	82.6	257.0	51.0	256.6
137.00	100.88	-18.70	-81.31	83.4	257.0	51.5	259.2
138.00	101.52	-18.91	-82.04	84.2	257.0	49.2	252.3
139.00	102.15	-19.13	-82.78	85.0	257.0	50.8	255.6
140.00	102.78	-19.34	-83.53	85.7	257.0	53.6	261.5
141.00	103.40	-19.57	-84.27	86.5	256.9	50.3	241.9
142.00	104.01	-19.77	-85.03	87.3	256.9	52.5	257.4
143.00	104.63	-19.95	-85.80	88.1	256.9	51.6	253.8
144.00	105.24	-20.15	-86.56	88.9	256.9	51.5	254.5
145.00	105.86	-20.38	-87.30	89.6	256.9	51.5	252.3
146.00	106.48	-20.57	-88.07	90.4	256.9	51.9	255.8
147.00	107.10	-20.78	-88.82	91.2	256.8	52.1	254.1
148.00	107.71	-20.97	-89.59	92.0	256.8	52.1	254.7
149.00	108.33	-21.18	-90.35	92.8	256.8	52.1	257.4
150.00	108.95	-21.39	-91.10	93.6	256.8	51.0	251.4
151.00	109.56	-21.61	-91.86	94.4	256.8	52.2	256.5
152.00	110.18	-21.83	-92.61	95.1	256.7	51.4	247.0
153.00	110.78	-22.00	-93.38	95.9	256.7	53.8	262.0
154.00	111.40	-22.19	-94.15	96.7	256.7	52.1	254.2
155.00	112.01	-22.40	-94.90	97.5	256.7	52.1	253.9
156.00	112.62	-22.59	-95.67	98.3	256.7	52.6	256.4
157.00	113.22	-22.79	-96.44	99.1	256.7	53.1	257.7
158.00	113.83	-22.98	-97.21	99.9	256.7	52.5	255.9
159.00	114.45	-23.20	-97.97	100.7	256.7	51.2	247.1
160.00	115.06	-23.42	-98.72	101.5	256.7	51.4	248.3
161.00	115.66	-23.63	-99.49	102.3	256.6	52.9	256.9
162.00	116.26	-23.83	-100.27	103.1	256.6	52.7	257.7
163.00	116.87	-24.03	-101.03	103.8	256.6	52.6	257.3
164.00	117.48	-24.24	-101.79	104.6	256.6	52.7	253.7
165.00	118.08	-24.46	-102.56	105.4	256.6	52.6	253.7
166.00	118.69	-24.68	-103.32	106.2	256.6	53.1	256.2
167.00	119.29	-24.88	-104.09	107.0	256.6	53.0	256.8
168.00	119.90	-25.09	-104.86	107.8	256.5	50.5	240.3
169.00	120.51	-25.31	-105.61	108.6	256.5	60.5	283.0
170.00	121.12	-25.59	-106.31	109.3	256.5	53.3	255.9
171.00	121.72	-25.81	-107.08	110.1	256.4	53.4	255.7
172.00	122.32	-26.02	-107.85	110.9	256.4	51.4	262.3
173.00	122.92	-26.21	-108.62	111.7	256.4	52.8	254.0
174.00	123.52	-26.40	-109.39	112.5	256.4	52.8	257.0
175.00	124.13	-26.61	-110.16	113.3	256.4	51.8	253.5
175.40	124.34	-26.66	-110.44	113.6	256.4	54.6	265.5



NEUTRON THROUGH RODS 1:100 CM12-06 10/10/12

LOG PARAMETERS

MATRIX DENSITY 2.65 NEUTRON MATRIX SANDSTONE MATRIX DELTA T 177
MAGNETIC DECL. 15.3 ELECT. CUTOFF 99999 MT SIZE 12-45
PRESENTATION NAMEDATE < 2012-CROWA_NEUTRON.TR.0 08/29/2012 > VERSION 5.5MAP



NEUTRON THROUGH RODS 1:100 CM12-06 10/10/12

LOG PARAMETERS

MATRIX DENSITY 2.65 NEUTRON MATRIX SANDSTONE MATRIX DELTA T 177
MAGNETIC DECL. 15.3 ELECT. CUTOFF 99999 MT SIZE 12-45
PRESENTATION NAMEDATE < 2012-CROWA_NEUTRON.TR.0 08/29/2012 > VERSION 5.5MAP

TOOL CALIBRATION CM12-06 10/10/12 10:24
TOOL MODEL TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02.12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
2	Aug02.12	04:09:25	NEUTRON	1.000	[CPS]	453.000	[CPS]
2	Oct15.07	08:00:58	PORCSDT	Default	[CPS]		
3	May12.08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
4	May12.08	08:20:59	RES	10000.000	[OHM]	7810.000	[CPS]
4	May12.08	08:20:52	SP	0.000	[MV]	0.000	[CPS]
4	May12.08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec12.08	10:40:49	NEUTRON	15.000	[API-N]	0.000	[CPS]
	Dec08.08	10:40:49	NEUTRO	21.000	[API-N]	1.000	[CPS]
6	Oct15.07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15.07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-09

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-09
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:09/11/12	RIG NUMBER	:GED
DEPTH DRILLER	:163.00	LOGGER TD	:163.00
BIT SIZE	:120.65	ARRIVAL TIME	:10:30
LOG TOP	:0.00	DEPARTURE TIME	:16:00
LOG BOTTOM	:162.58	CIRC STOPPED	:N/A
CASING LOGGER	:3.00		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

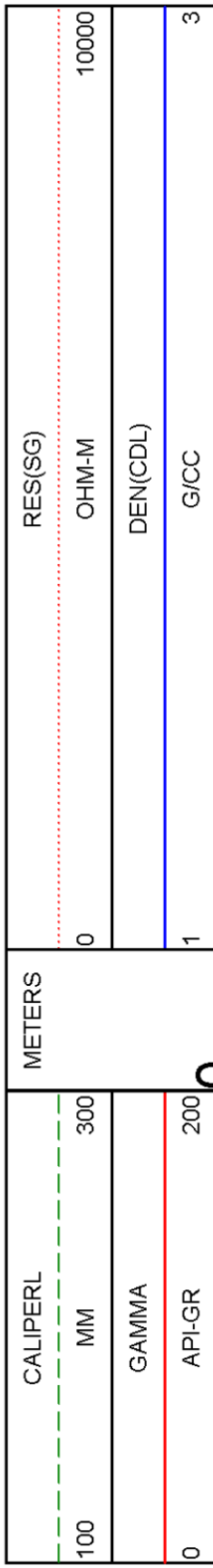
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

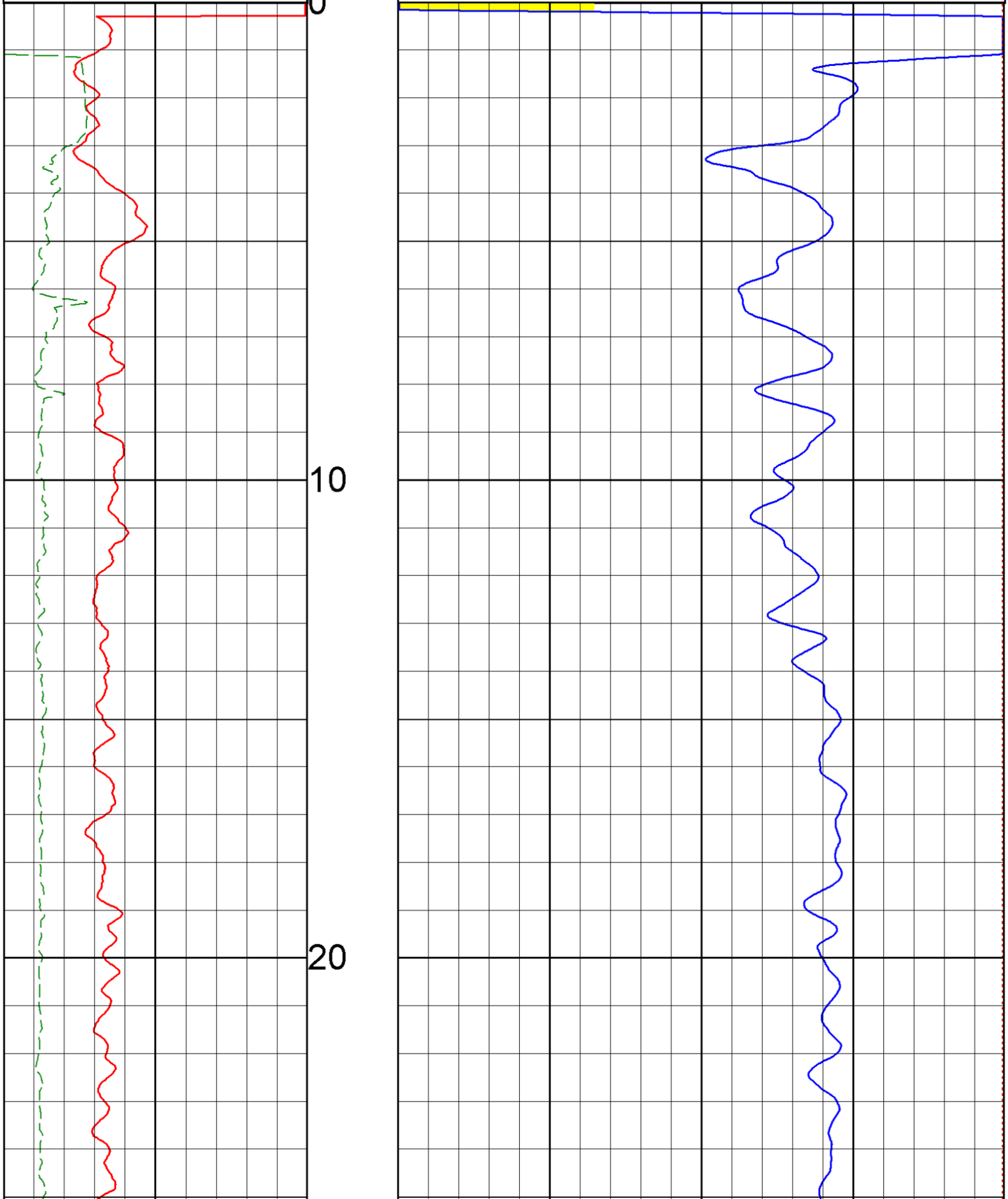
DENSITY 1:100 CM12-09 09/11/12

LOG PARAMETERS

MATRIX DENSITY :	2.65	NEUTRON MATRIX :	SANDSTONE
MAGNETIC DECL :	15.3	ELECT. CUTOFF	: 99999
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-RES.0 08/21/2012		

MATRIX DELTA T :	177
BIT SIZE	: 120.65
VERSION	= 3.64KF

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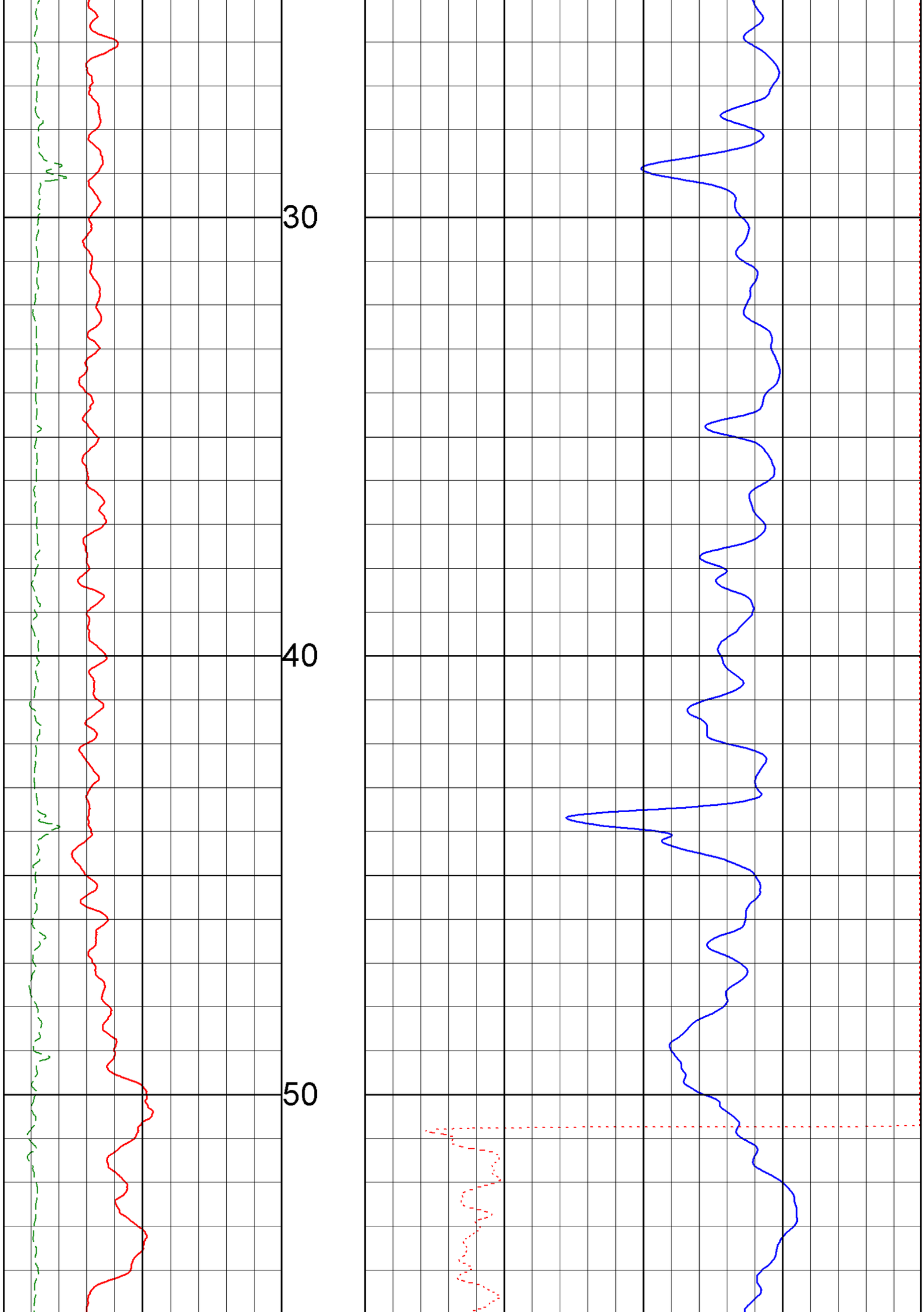
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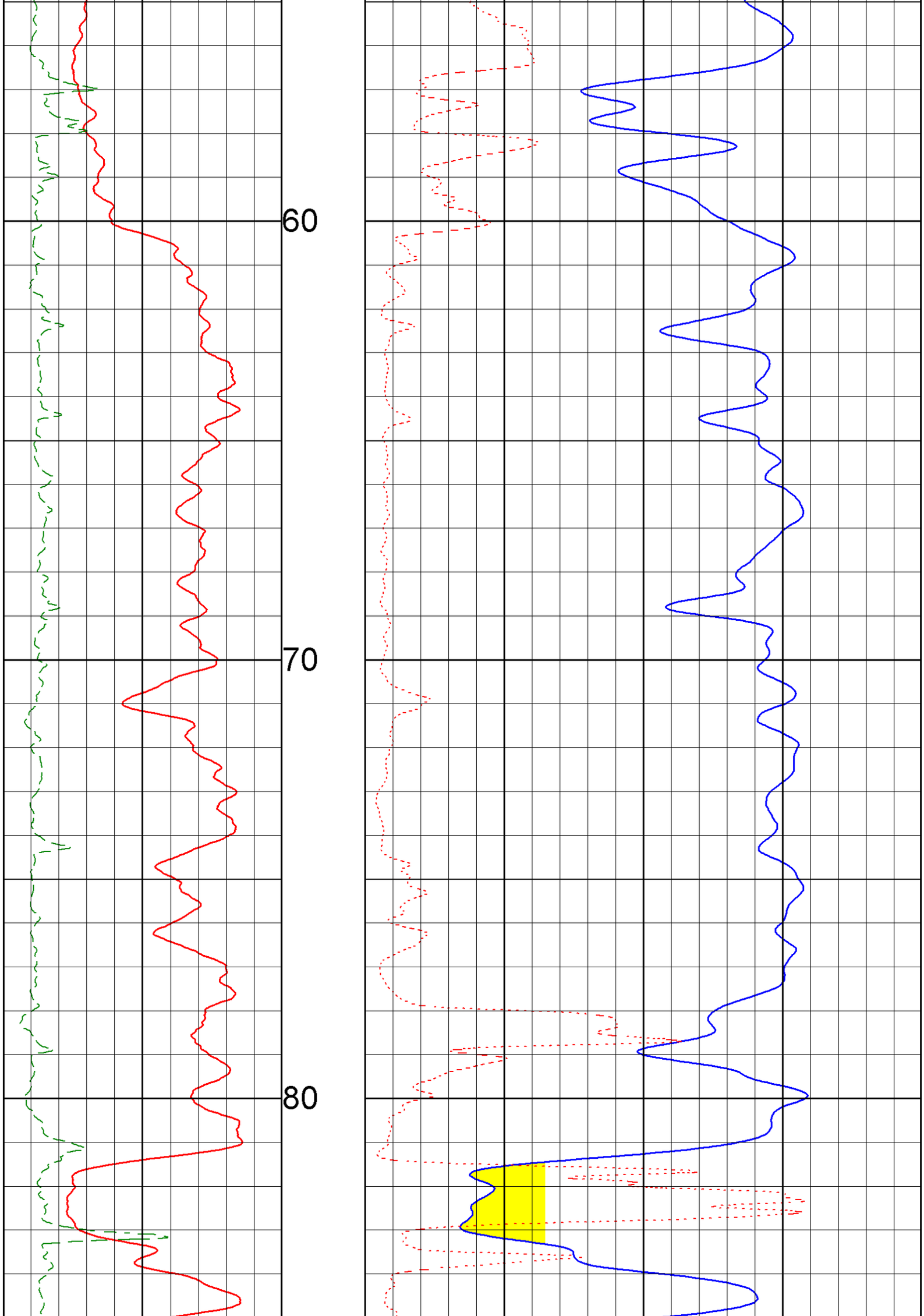
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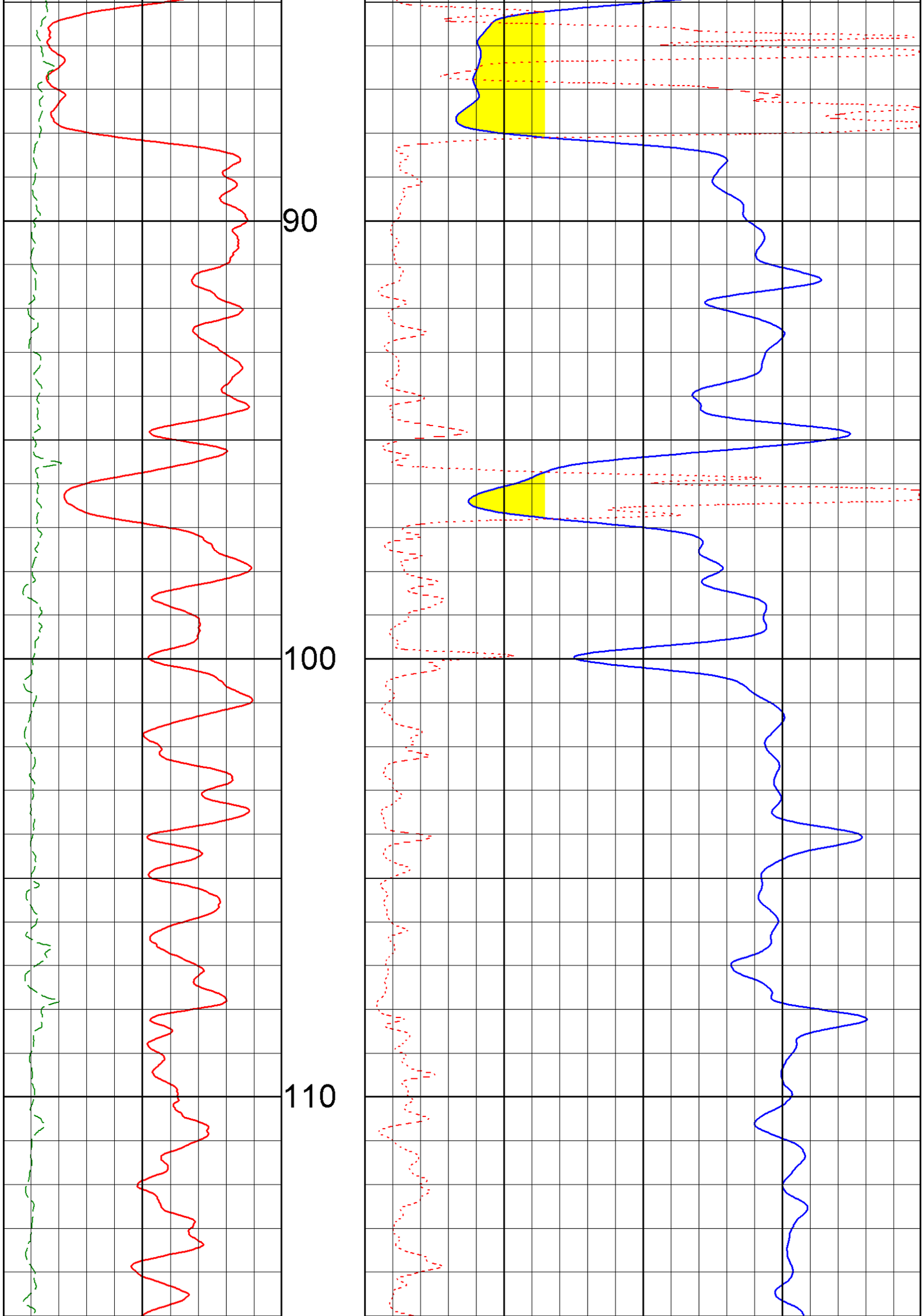
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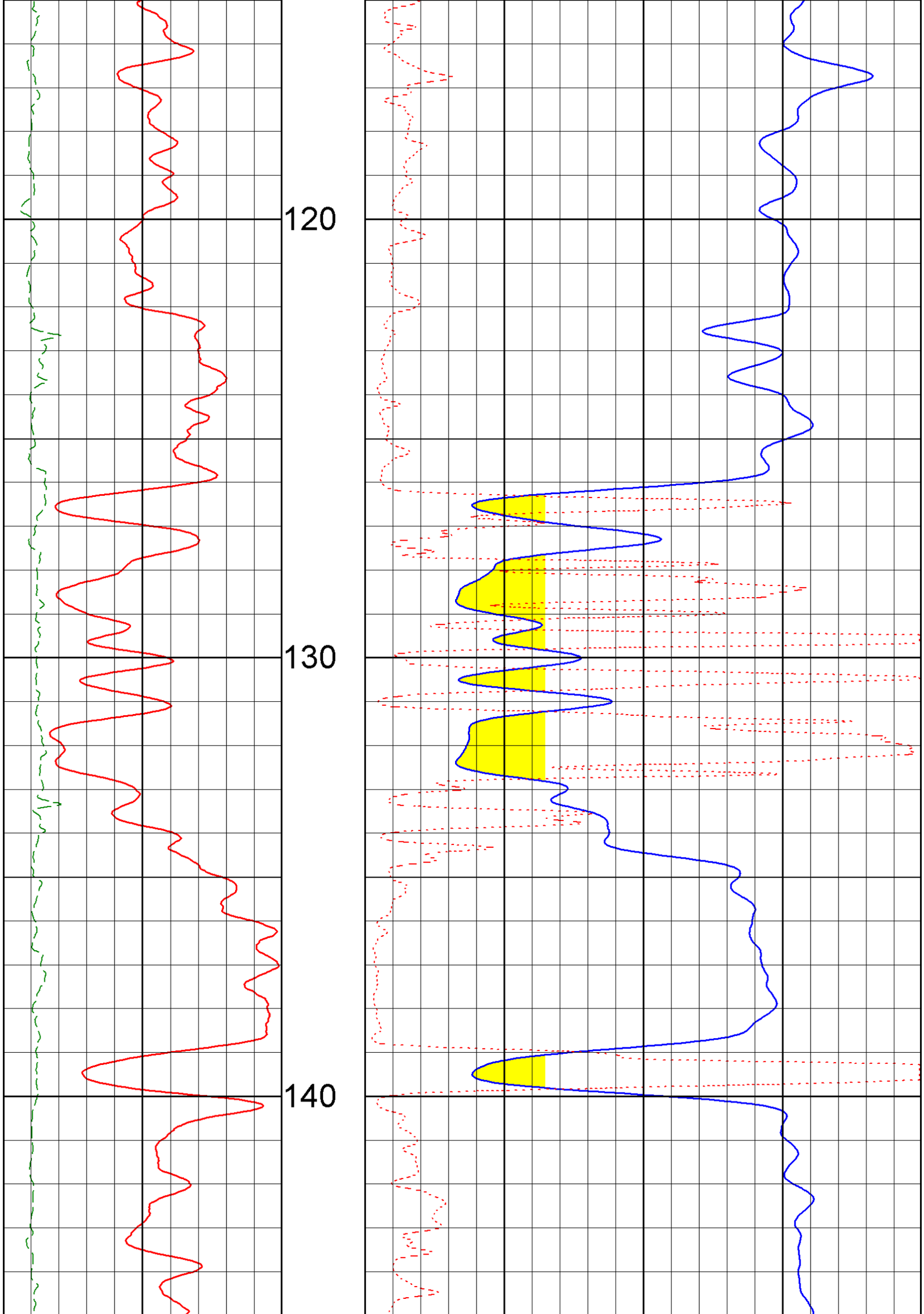
110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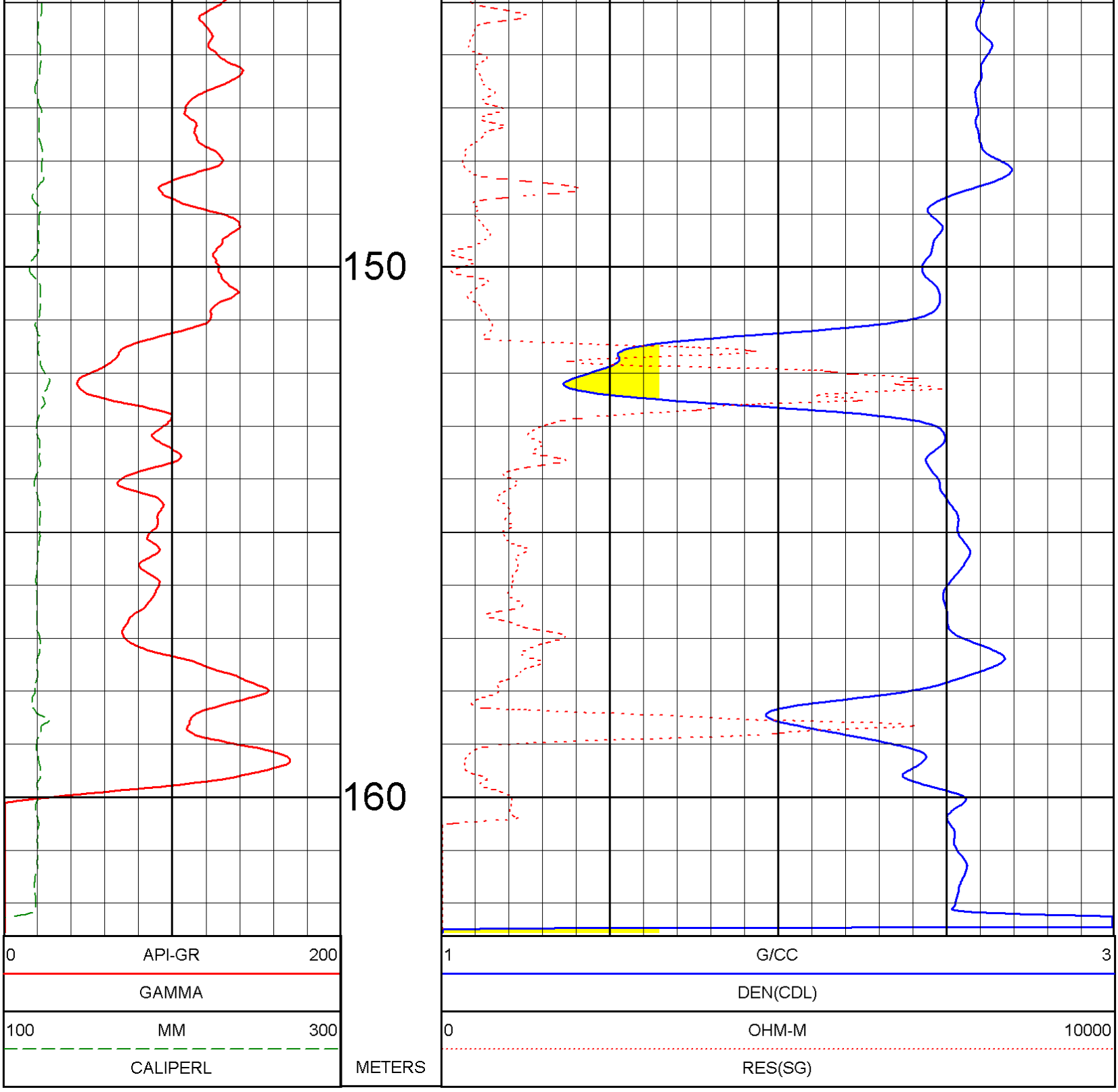
130
140



DENSITY 1:100 CM12-09 09/11/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM12-09 09/11/12 14:58
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

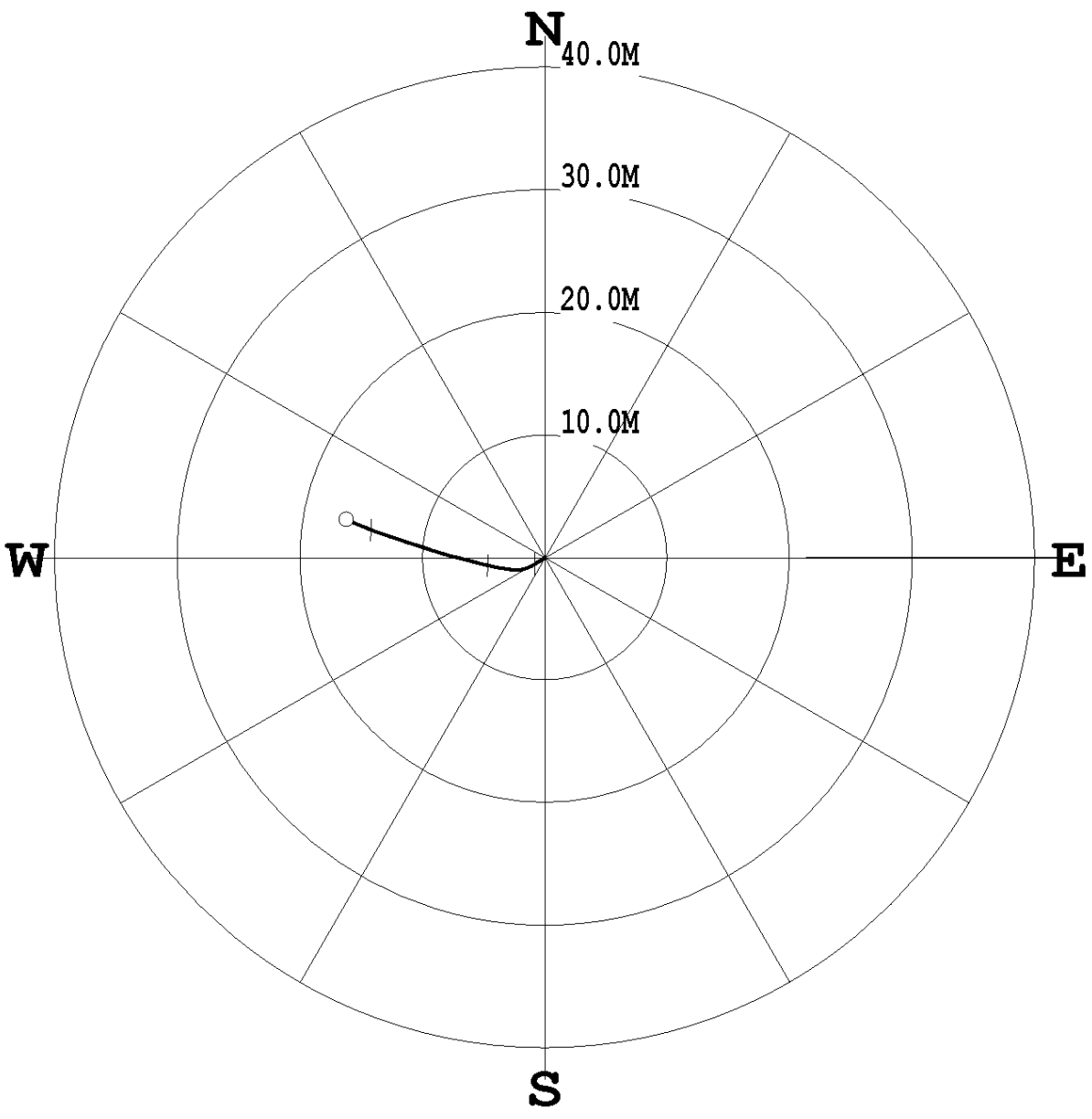
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-09
DATE OF LOG: 09/11/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 5 M/CM
TRUE DEPTH: 161.22 M
AZIMUTH: 280.8
DISTANCE: 16.5 M
+ = 50 M INCR
○ = BOTTOM OF HOLE

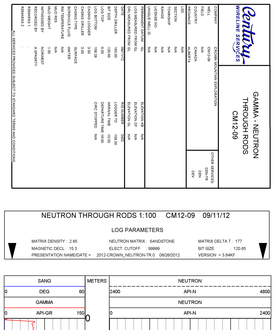


* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY GEO
DATA FROM : N/A
MAG. DECL. : 15.300
LOG: CM12-09_09-11-12_14-21_9055A_.02_6.00_162.64_DEVI.log

HOLE ID. : CM12-09
DATE OF LOG : 09/11/12
PROBE : 9055A , 59
DEPTH UNITS : METERS

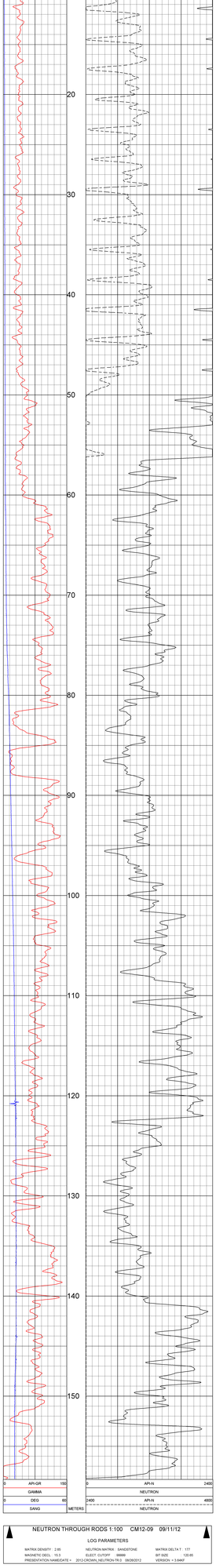
CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
6.02	6.02	0.00	-0.00	0.0	275.2	0.6	275.2
7.00	7.00	-0.00	-0.01	0.0	268.2	0.7	261.0
8.00	8.00	-0.00	-0.02	0.0	264.4	0.5	265.5
9.00	9.00	-0.00	-0.03	0.0	262.0	0.8	266.0
10.00	10.00	-0.01	-0.04	0.0	259.1	0.8	268.8
11.00	11.00	-0.01	-0.05	0.1	255.5	0.4	219.7
12.00	12.00	-0.02	-0.07	0.1	252.1	0.7	241.2
13.00	13.00	-0.03	-0.08	0.1	248.3	0.8	219.1
14.00	14.00	-0.04	-0.09	0.1	244.3	1.8	225.3
15.00	15.00	-0.06	-0.10	0.1	241.4	1.0	240.0
16.00	16.00	-0.07	-0.12	0.1	240.1	1.5	218.1
17.00	17.00	-0.08	-0.13	0.2	238.5	1.1	215.8
18.00	18.00	-0.09	-0.15	0.2	237.9	1.5	227.0
19.00	19.00	-0.11	-0.17	0.2	236.8	1.1	222.8
20.00	20.00	-0.12	-0.18	0.2	236.2	1.1	247.9
21.00	21.00	-0.13	-0.19	0.2	235.8	1.3	224.0
22.00	22.00	-0.14	-0.21	0.3	235.4	1.0	229.7
23.00	23.00	-0.15	-0.22	0.3	235.3	1.2	234.8
24.00	24.00	-0.17	-0.24	0.3	235.3	1.2	236.0
25.00	25.00	-0.18	-0.26	0.3	235.3	1.2	247.8
26.00	26.00	-0.19	-0.28	0.3	235.1	1.6	239.2
27.00	27.00	-0.20	-0.30	0.4	235.5	1.5	240.5
28.00	28.00	-0.21	-0.32	0.4	236.1	1.4	258.2
29.00	29.00	-0.22	-0.34	0.4	236.8	1.2	256.9
30.00	30.00	-0.23	-0.36	0.4	237.1	1.2	239.3
31.00	31.00	-0.24	-0.38	0.5	237.2	1.3	244.8
32.00	32.00	-0.26	-0.40	0.5	237.5	1.5	240.9
33.00	32.99	-0.27	-0.42	0.5	237.8	1.5	238.9
34.00	33.99	-0.28	-0.45	0.5	238.1	1.5	232.3
35.00	34.99	-0.29	-0.47	0.6	238.4	1.5	248.2
36.00	35.99	-0.30	-0.49	0.6	238.6	1.4	240.8
37.00	36.99	-0.31	-0.52	0.6	238.8	1.5	243.6
38.00	37.99	-0.32	-0.54	0.6	239.0	1.7	272.1
39.00	38.99	-0.33	-0.56	0.7	239.2	1.4	226.0
40.00	39.99	-0.35	-0.58	0.7	239.2	1.3	245.9
41.00	40.99	-0.36	-0.61	0.7	239.1	1.4	237.4
42.00	41.99	-0.38	-0.63	0.7	238.9	1.6	228.9
43.00	42.99	-0.39	-0.65	0.8	238.7	1.5	226.8
44.00	43.99	-0.41	-0.67	0.8	238.3	1.6	228.1
45.00	44.99	-0.43	-0.69	0.8	238.1	1.6	244.8
46.00	45.99	-0.45	-0.71	0.8	238.0	1.7	229.0
47.00	46.99	-0.46	-0.74	0.9	237.9	1.7	222.6
48.00	47.99	-0.48	-0.77	0.9	237.8	2.1	236.0
49.00	48.99	-0.50	-0.80	0.9	237.9	2.0	250.4
50.00	49.99	-0.52	-0.83	1.0	237.9	1.9	229.7
51.00	50.99	-0.54	-0.85	1.0	237.9	1.6	242.2
52.00	51.99	-0.55	-0.88	1.0	238.0	2.0	232.0
53.00	52.99	-0.57	-0.91	1.1	238.0	2.1	238.4
54.00	53.99	-0.58	-0.94	1.1	238.1	1.9	247.2
55.00	54.98	-0.60	-0.97	1.1	238.2	2.1	239.0
56.00	55.98	-0.62	-1.00	1.2	238.3	1.9	235.8
57.00	56.98	-0.64	-1.04	1.2	238.5	2.2	248.3
58.00	57.98	-0.65	-1.07	1.3	238.6	1.9	243.0
59.00	58.98	-0.67	-1.10	1.3	238.7	2.0	246.7
60.00	59.98	-0.69	-1.13	1.3	238.8	2.4	226.5
61.00	60.98	-0.71	-1.17	1.4	238.9	2.4	244.0
62.00	61.98	-0.73	-1.21	1.4	239.1	2.5	243.7
63.00	62.98	-0.74	-1.25	1.5	239.3	2.4	254.0
64.00	63.98	-0.76	-1.29	1.5	239.6	2.5	250.1
65.00	64.98	-0.77	-1.33	1.5	239.8	2.2	246.1
66.00	65.98	-0.79	-1.37	1.6	240.0	2.2	249.0
67.00	66.97	-0.81	-1.41	1.6	240.3	2.8	249.0
68.00	67.97	-0.82	-1.45	1.7	240.5	2.6	250.3
69.00	68.97	-0.84	-1.50	1.7	240.7	2.7	246.2
70.00	69.97	-0.85	-1.54	1.8	241.0	2.5	247.7
71.00	70.97	-0.87	-1.58	1.8	241.2	2.8	231.1
72.00	71.97	-0.89	-1.63	1.9	241.5	3.2	252.9
73.00	72.97	-0.90	-1.69	1.9	241.9	3.6	244.7
74.00	73.97	-0.92	-1.74	2.0	242.2	3.3	254.9
75.00	74.96	-0.93	-1.80	2.0	242.6	3.5	255.9
76.00	75.96	-0.95	-1.86	2.1	243.0	3.8	252.0
77.00	76.96	-0.97	-1.93	2.2	243.4	4.2	254.9
78.00	77.96	-0.98	-2.00	2.2	243.9	4.5	262.0
79.00	78.95	-0.99	-2.08	2.3	244.7	4.9	259.2
80.00	79.95	-0.99	-2.17	2.4	245.5	5.2	275.0
81.00	80.94	-0.99	-2.27	2.5	246.3	5.6	268.2
82.00	81.94	-0.99	-2.36	2.6	247.2	5.8	272.0
83.00	82.94	-0.99	-2.46	2.7	248.1	5.7	274.4
84.00	83.93	-0.99	-2.57	2.7	249.0	6.3	274.1
85.00	84.92	-0.98	-2.68	2.8	250.0	6.3	273.7
86.00	85.92	-0.96	-2.79	2.9	251.0	6.4	276.2
87.00	86.91	-0.94	-2.90	3.0	252.0	6.6	280.9
88.00	87.90	-0.93	-3.01	3.1	252.9	6.5	277.3
89.00	88.90	-0.91	-3.13	3.3	253.7	7.3	279.0
90.00	89.89	-0.90	-3.25	3.4	254.6	7.1	276.7
91.00	90.88	-0.88	-3.37	3.5	255.4	7.3	279.5
92.00	91.87	-0.86	-3.50	3.6	256.2	7.7	262.0
93.00	92.86	-0.84	-3.63	3.7	257.0	8.0	278.7
94.00	93.85	-0.82	-3.77	3.9	257.8	7.9	282.1
95.00	94.84	-0.79	-3.91	4.0	258.6	8.2	284.7
96.00	95.83	-0.76	-4.05	4.1	259.3	8.1	271.8
97.00	96.82	-0.73	-4.19	4.3	260.1	8.5	281.5
98.00	97.81	-0.70	-4.34	4.4	260.9	8.9	285.1
99.00	98.80	-0.66	-4.49	4.5	261.6	8.9	284.4
100.00	99.79	-0.63	-4.64	4.7	262.3	9.0	284.5
101.00	100.78	-0.59	-4.79	4.8	263.0	9.2	285.5
102.00	101.76	-0.56	-4.95	5.0	263.5	8.9	271.7
103.00	102.75	-0.53	-5.11	5.1	264.1	9.2	282.6
104.00	103.74	-0.48	-5.26	5.3	264.8	9.5	281.2
105.00	104.72	-0.44	-5.43	5.4	265.4	9.8	288.3
106.00	105.71	-0.39	-5.60	5.6	266.0	10.1	287.0
107.00	106.69	-0.35	-5.77	5.8	266.5	10.5	287.4
108.00	107.67	-0.30	-5.95	6.0	267.1	10.5	285.4
109.00	108.66	-0.26	-6.12	6.1	267.6	10.3	287.2
110.00	109.64	-0.21	-6.29	6.3	268.1	10.5	285.7
111.00	110.62	-0.17	-6.47	6.5	268.5	10.5	279.9
112.00	111.61	-0.12	-6.64	6.6	269.0	10.7	289.8
113.00	112.59	-0.07	-6.82	6.8	269.5	10.8	286.8
114.00	113.57	-0.02	-7.00	7.0	269.8	10.6	279.8
115.00	114.55	0.03	-7.19	7.2	270.3	11.4	285.5
116.00	115.53	0.07	-7.38	7.4	270.5	11.3	287.5
117.00	116.52	0.11	-7.55	7.6	270.8	11.2	295.5
118.00	117.50	0.16	-7.74	7.7	271.1	11.0	280.1
119.00	118.48	0.22	-7.92	7.9	271.6	11.3	285.2
120.00	119.46	0.26	-8.11	8.1	271.8	12.2	295.4
121.00	120.44	0.32	-8.30	8.3	272.2	12.0	289.7
122.00	121.42	0.38	-8.49	8.5	272.5	11.5	289.2
123.00	122.40	0.44	-8.69	8.7	272.9	11.9	284.3
124.00	123.37	0.50	-8.89	8.9	273.2	12.4	290.3
125.00	124.35	0.56	-9.09	9.1	273.5	11.7	291.6
126.00	125.33	0.62	-9.29	9.3	273.8	12.6	297.5
127.00	126.31	0.69	-9.48	9.5	274.2	12.0	288.1
128.00	127.29	0.76	-9.68	9.7	274.5	11.8	287.5
129.00	128.27	0.82	-9.87	9.9	274.8	12.2	282.2
130.00	129.24	0.89	-10.07	10.1	275.0	11.9	286.3
131.00	130.22	0.95	-10.27	10.3	275.3	12.1	291.8
132.00	131.20	1.02	-10.47	10.5	275.6	12.4	289.1
133.00	132.18	1.08	-10.67	10.7	275.8	12.0	287.3
134.00	133.16	1.14	-10.86	10.9	276.0	12.1	288.5
135.00	134.13	1.21	-11.07	11.1	276.2	12.1	287.2
136.00	135.11	1.27	-11.27	11.3	276.4	12.2	288.4
137.00	136.09	1.34	-11.47	11.5	276.6	12.4	288.8
138.00	137.06	1.40	-11.67	11.8	276.9	12.3	289.5
139.00	138.04	1.47	-11.87	12.0	277.1	12.0	288.6
140.00	139.02	1.54	-12.07	12.2	277.3	12.1	289.9
141.00	140.00	1.61	-12.26	12.4	277.5	12.0	288.8
142.00	140.98	1.68	-12.46	12.6	277.7	12.3	285.1
143.00	141.95	1.73	-12.66	12.8	277.8	12.5	290.2
144.00	142.93	1.80	-12.87	13.0	278.0	12.2	288.7
145.00	143.91	1.88	-13.07	13.2	278.2	12.3	287.3
146.00	144.88	1.95	-13.27	13.4	278.4	11.9	288.3
147.00	145.86	1.99	-13.45	13.6	278.4	11.5	287.1
148.00	146.84	2.06	-13.63	13.8	278.6	11.2	290.7
149.00	147.83	2.13	-13.81	14.0	278.8	11.1	290.5
150.00	148.81	2.19	-13.99	14.2	278.9	10.7	290.4
151.00	149.79	2.27	-14.16	14.3	279.1	10.6	293.3
152.00	150.77	2.33	-14.34	14.5	279.3	11.0	293.2
153.00	151.75	2.40	-14.51	14.7	279.4	11.0	292.4
154.00	152.74	2.47	-14.68	14.9	279.6	10.6	292.3
155.00	153.72	2.54	-14.86	15.1	279.7	10.7	294.8
156.00	154.70	2.61	-15.03	15.3	279.9	10.7	290.5
157.00	155.68	2.68	-15.20	15.4	280.0	10.7	287.3
158.00	156.67	2.75	-15.38	15.6	280.1	10.8	293.3
159.00	157.65	2.83	-15.55	15.8	280.3	10.8	289.9
160.00	158.63	2.90	-15.72	16.0	280.5	10.7	292.7
161.00	159.61	2.98	-15.90	16.2	280.6	10.8	290.5
162.00	160.59	3.05	-16.07	16.4	280.7	11.1	290.3
162.64	161.18	3.10	-16.18	16.5	280.8	11.3	295.8



NEUTRON THROUGH RODS 1:100 CM12-09 09/11/12

LOG PARAMETERS

MATRIX DENSITY = 2.65	NEUTRON MATRIX = SANDSTONE		MATRIX DELTA T = 177
MAGNETIC DECL = 11.3	ELECT. CUTOFF = 9999		BIT SIZE = 130.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR-9 - 09/09/2012			VERSION = 3.6467



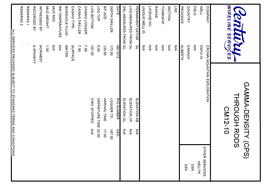
NEUTRON THROUGH RODS 1:100 CM12-09 09/11/12

LOG PARAMETERS

MATRIX DENSITY = 2.65	NEUTRON MATRIX = SANDSTONE		MATRIX DELTA T = 177
MAGNETIC DECL = 11.3	ELECT. CUTOFF = 9999		BIT SIZE = 130.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR-9 - 09/09/2012			VERSION = 3.6467

TOOL CALIBRATION CM12-09 09/11/12 11:58
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug07,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug07,12	04:09:25	GAMMA	545.000	API-GR [	452.000	[CPS]
2	May12,06	08:20:59	WEIGHT	0.000	LBS [		
3	May12,06	08:20:59	RES	0.000	OHM [	9674.000	[CPS]
	May12,06	08:20:59	RES	100.000	OHM [	7978.000	[CPS]
4	May12,06	08:20:52	SP	0.000	MV [	1.000	[CPS]
	May12,06	08:20:52	SP	160.000	MV [	3462.000	[CPS]
5	Oct14,08	10:40:49	ELECTRODE	271.000	API-N [	1.000	[CPS]
	Oct14,08	10:40:49	NEUTRC	271.000	API-N [	99.000	[CPS]
6	Oct15,07	08:00:56	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:56	TEMP	Default	[CPS]	Default	[CPS]



DENSITY THROUGH RODS 1:100 CM12-10 09/12/12

LOG PARAMETERS

MATRIX DENSITY 2.65 NEUTRON MATRIX SANDSTONE MATRIX DELTA T 177
MAGNETIC DECL. 15.5 ELECT. CUTOFF 99999 BIT SIZE 120.65
PRESENTATION NAME/DATE = 2012 CM12KEN_DENSITY 09 TK 0 09/03/2012 VERSION = 3.64AF

GAMMA METERS GAM GAMH
150 API-GR 300 45000 CPS 45500
GAMMA GAM GAMH
0 API-GR 150 45000 CPS 50000

0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160

0 API-GR 150 45000 CPS 50000
GAMMA GAM GAMH
150 API-GR 300 45000 CPS 45500
GAMMA METERS GAM GAMH

DENSITY THROUGH RODS 1:100 CM12-10 09/12/12

LOG PARAMETERS

MATRIX DENSITY 2.65 NEUTRON MATRIX SANDSTONE MATRIX DELTA T 177
MAGNETIC DECL. 15.5 ELECT. CUTOFF 99999 BIT SIZE 120.65
PRESENTATION NAME/DATE = 2012 CM12KEN_DENSITY 09 TK 0 09/03/2012 VERSION = 3.64AF

TOOL CALIBRATION: CM12-10 09/12/12 19:08
TOOL: 9089A TM VERSION 3
SERIAL NUMBER: 8453

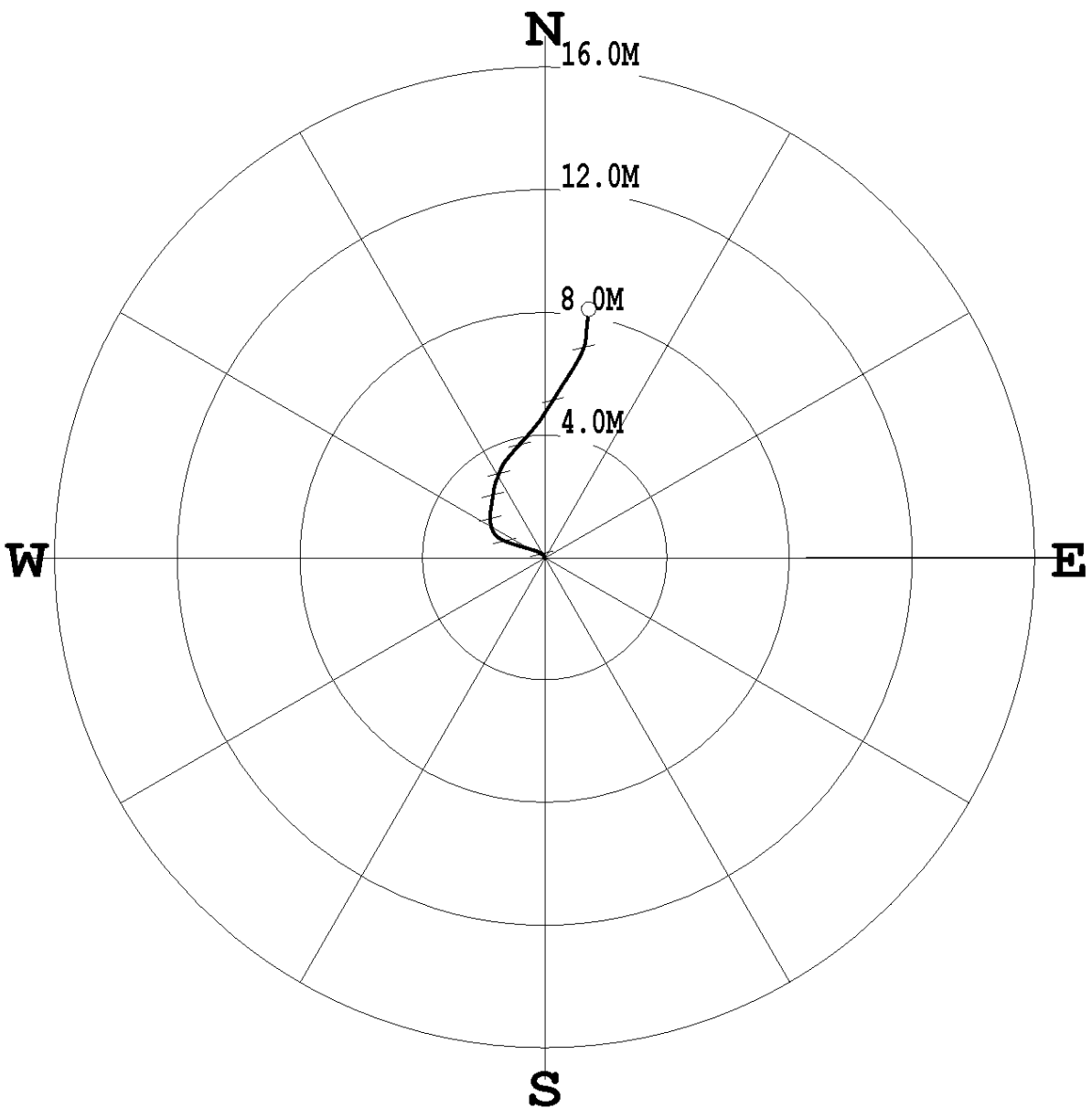
	DATE	TIME	SENSOR	STANDARD	RESPONSE
1	Aug28,12	07:52:32	Default	Default [API]	Default [CPS]
	Aug28,12	07:52:32	GAMMA	540.000 [API-GR_]	195.595 [CPS]

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-10
DATE OF LOG: 09/12/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 2 M/CM
TRUE DEPTH: 171.23 M
AZIMUTH: 10.1
DISTANCE: 8.2 M
+ = 20 M INCR
○ = BOTTOM OF HOLE

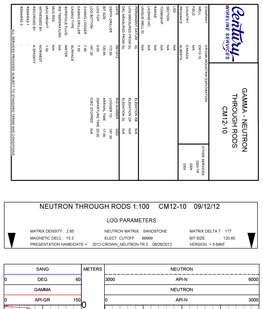


* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY GEO
DATA FROM : N/A
MAG. DECL. : 15.300
LOG: CM12-10_09-12-12_20-57_9055A_.02_11.00_171.62_DEVI.log

HOLE ID. : CM12-10
DATE OF LOG : 09/12/12
PROBE : 9055A , 59
DEPTH UNITS : METERS

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
11.02	11.02	0.00	-0.00	0.0	354.2	0.7	354.2
12.00	12.00	0.01	-0.01	0.0	326.6	0.8	336.2
13.00	13.00	0.02	-0.01	0.0	326.7	1.0	328.3
14.00	14.00	0.03	-0.02	0.0	328.1	0.9	321.7
15.00	15.00	0.05	-0.03	0.1	326.6	1.1	336.9
16.00	16.00	0.07	-0.04	0.1	327.5	1.9	324.3
17.00	17.00	0.08	-0.05	0.1	326.1	1.4	331.7
18.00	18.00	0.10	-0.07	0.1	325.2	1.1	320.6
19.00	19.00	0.12	-0.09	0.1	323.8	1.2	316.8
20.00	20.00	0.13	-0.10	0.2	321.8	1.6	300.0
21.00	21.00	0.15	-0.13	0.2	319.1	2.0	281.0
22.00	22.00	0.16	-0.16	0.2	315.9	1.6	299.6
23.00	23.00	0.18	-0.19	0.3	313.3	2.3	312.5
24.00	24.00	0.20	-0.23	0.3	310.7	3.0	300.9
25.00	24.99	0.22	-0.29	0.4	307.9	3.9	296.8
26.00	25.99	0.24	-0.34	0.4	304.8	4.3	290.0
27.00	26.99	0.26	-0.41	0.5	302.3	4.0	284.8
28.00	27.99	0.28	-0.48	0.6	300.0	5.0	308.7
29.00	28.98	0.30	-0.55	0.6	298.4	4.5	285.6
30.00	29.98	0.32	-0.63	0.7	297.2	4.5	286.2
31.00	30.98	0.34	-0.70	0.8	296.1	4.6	294.8
32.00	31.97	0.37	-0.78	0.9	295.3	4.5	290.8
33.00	32.97	0.39	-0.85	0.9	294.7	4.6	291.1
34.00	33.97	0.41	-0.93	1.0	293.8	4.6	290.1
35.00	34.96	0.43	-1.00	1.1	293.4	4.3	286.3
36.00	35.96	0.46	-1.07	1.2	293.1	4.1	288.1
37.00	36.96	0.48	-1.14	1.2	292.9	4.2	292.7
38.00	37.96	0.50	-1.20	1.3	292.7	3.8	293.3
39.00	38.96	0.53	-1.26	1.4	292.7	3.1	291.9
40.00	39.95	0.55	-1.32	1.4	292.7	3.3	295.2
41.00	40.95	0.57	-1.37	1.5	292.6	3.4	297.8
42.00	41.95	0.60	-1.42	1.5	292.8	2.9	298.2
43.00	42.95	0.62	-1.46	1.6	293.1	3.1	299.4
44.00	43.95	0.65	-1.50	1.6	293.3	2.7	302.3
45.00	44.95	0.67	-1.54	1.7	293.6	2.5	316.5
46.00	45.95	0.70	-1.58	1.7	293.9	2.3	307.0
47.00	46.94	0.73	-1.60	1.8	294.4	2.1	306.4
48.00	47.94	0.76	-1.63	1.8	295.0	2.8	328.9
49.00	48.94	0.80	-1.66	1.8	295.7	3.1	330.2
50.00	49.94	0.84	-1.69	1.9	296.4	2.4	324.1
51.00	50.94	0.88	-1.71	1.9	297.3	2.9	340.7
52.00	51.94	0.92	-1.72	2.0	298.2	2.5	329.8
53.00	52.94	0.96	-1.74	2.0	299.0	3.0	337.0
54.00	53.94	1.01	-1.75	2.0	299.8	2.6	333.0
55.00	54.94	1.05	-1.77	2.1	300.8	2.6	351.4
56.00	55.93	1.10	-1.77	2.1	301.8	2.6	355.1
57.00	56.93	1.14	-1.78	2.1	302.7	1.9	352.0
58.00	57.93	1.19	-1.78	2.1	303.7	2.5	356.1
59.00	58.93	1.23	-1.78	2.2	304.6	2.5	354.3
60.00	59.93	1.28	-1.78	2.2	305.6	2.7	355.3
61.00	60.93	1.32	-1.79	2.2	306.5	2.5	2.0
62.00	61.93	1.36	-1.78	2.2	307.4	2.4	1.0
63.00	62.93	1.40	-1.78	2.3	308.2	2.3	8.1
64.00	63.93	1.44	-1.78	2.3	309.0	2.1	1.0
65.00	64.93	1.48	-1.78	2.3	309.9	2.3	6.0
66.00	65.93	1.52	-1.77	2.3	310.6	2.1	1.0
67.00	66.92	1.56	-1.77	2.4	311.4	2.3	11.6
68.00	67.92	1.60	-1.76	2.4	312.2	2.8	11.0
69.00	68.92	1.64	-1.76	2.4	313.1	2.3	3.1
70.00	69.92	1.68	-1.75	2.4	313.8	2.1	8.1
71.00	70.92	1.71	-1.75	2.4	314.5	2.1	3.4
72.00	71.92	1.75	-1.74	2.5	315.2	2.2	5.4
73.00	72.92	1.80	-1.74	2.5	316.0	2.4	7.7
74.00	73.92	1.83	-1.73	2.5	316.6	2.1	11.3
75.00	74.92	1.87	-1.72	2.5	317.3	2.1	10.6
76.00	75.92	1.90	-1.72	2.6	317.9	2.0	8.1
77.00	76.92	1.94	-1.71	2.6	318.5	2.1	22.6
78.00	77.92	1.97	-1.71	2.6	319.2	2.1	13.1
79.00	78.92	2.01	-1.70	2.6	319.8	2.1	6.1
80.00	79.92	2.05	-1.70	2.7	320.4	2.1	7.4
81.00	80.91	2.08	-1.69	2.7	321.0	2.2	358.0
82.00	81.91	2.12	-1.69	2.7	321.5	1.9	1.5
83.00	82.91	2.16	-1.68	2.7	322.0	1.8	358.1
84.00	83.91	2.19	-1.68	2.8	322.6	2.2	11.1
85.00	84.91	2.23	-1.67	2.8	323.2	2.1	9.5
86.00	85.91	2.27	-1.66	2.8	323.7	2.0	12.7
87.00	86.91	2.30	-1.66	2.8	324.2	2.3	358.9
88.00	87.91	2.34	-1.65	2.9	324.8	2.2	16.5
89.00	88.91	2.37	-1.64	2.9	325.4	2.2	12.2
90.00	89.91	2.41	-1.63	2.9	326.0	2.2	14.0
91.00	90.91	2.45	-1.62	2.9	326.5	1.8	14.0
92.00	91.91	2.48	-1.61	3.0	327.0	1.8	17.9
93.00	92.91	2.50	-1.60	3.0	327.5	1.6	20.9
94.00	93.91	2.53	-1.59	3.0	327.9	1.1	22.7
95.00	94.91	2.56	-1.57	3.0	328.4	2.1	21.8
96.00	95.91	2.59	-1.56	3.0	328.9	2.3	31.4
97.00	96.90	2.62	-1.54	3.0	329.5	2.4	17.8
98.00	97.90	2.66	-1.53	3.1	330.1	2.4	22.0
99.00	98.90	2.70	-1.52	3.1	330.7	2.4	19.5
100.00	99.90	2.74	-1.50	3.1	331.3	2.4	16.2
101.00	100.90	2.78	-1.49	3.2	331.9	2.6	22.9
102.00	101.90	2.82	-1.47	3.2	332.5	2.2	10.8
103.00	102.90	2.86	-1.45	3.2	333.1	2.8	24.8
104.00	103.90	2.91	-1.43	3.2	333.8	2.7	27.8
105.00	104.90	2.95	-1.41	3.3	334.5	2.8	25.3
106.00	105.90	3.00	-1.39	3.3	335.1	2.9	23.2
107.00	106.89	3.04	-1.37	3.3	335.8	3.0	31.6
108.00	107.89	3.09	-1.34	3.4	336.5	2.7	46.8
109.00	108.89	3.13	-1.31	3.4	337.2	2.8	31.6
110.00	109.89	3.17	-1.28	3.4	338.0	3.4	51.1
111.00	110.89	3.21	-1.24	3.4	338.8	3.5	33.5
112.00	111.89	3.26	-1.21	3.5	339.7	3.5	38.5
113.00	112.88	3.31	-1.17	3.5	340.6	3.5	37.7
114.00	113.88	3.35	-1.12	3.5	341.5	4.2	43.8
115.00	114.88	3.40	-1.08	3.6	342.4	3.4	21.9
116.00	115.88	3.45	-1.04	3.6	343.2	3.8	39.0
117.00	116.88	3.51	-0.99	3.6	344.2	4.4	41.7
118.00	117.87	3.57	-0.94	3.7	345.2	4.4	41.2
119.00	118.87	3.63	-0.89	3.7	346.2	4.4	41.7
120.00	119.87	3.69	-0.84	3.8	347.2	4.8	43.7
121.00	120.86	3.75	-0.78	3.8	348.3	4.9	43.0
122.00	121.86	3.81	-0.72	3.9	349.3	4.9	40.8
123.00	122.85	3.88	-0.66	3.9	350.3	4.9	38.6
124.00	123.85	3.95	-0.60	4.0	351.4	5.4	40.6
125.00	124.85	4.02	-0.54	4.1	352.4	5.2	42.5
126.00	125.84	4.08	-0.48	4.1	353.3	4.7	36.8
127.00	126.84	4.14	-0.43	4.2	354.1	4.9	35.8
128.00	127.84	4.21	-0.37	4.2	355.0	5.2	41.7
129.00	128.83	4.28	-0.31	4.3	355.8	5.4	39.9
130.00	129.83	4.35	-0.26	4.4	356.6	5.0	38.5
131.00	130.82	4.42	-0.20	4.4	357.4	4.8	35.6
132.00	131.82	4.49	-0.15	4.5	358.0	4.9	29.0
133.00	132.82	4.56	-0.11	4.6	358.7	4.9	28.7
134.00	133.81	4.64	-0.06	4.6	359.3	5.0	33.3
135.00	134.81	4.72	-0.01	4.7	359.9	5.5	22.0
136.00	135.80	4.80	0.04	4.8	0.5	5.6	34.2
137.00	136.80	4.88	0.10	4.9	1.2	6.2	36.1
138.00	137.79	4.96	0.15	5.0	1.7	5.6	33.2
139.00	138.79	5.04	0.20	5.0	2.3	5.8	33.0
140.00	139.78	5.13	0.25	5.1	2.8	5.6	33.8
141.00	140.78	5.21	0.31	5.2	3.4	5.7	32.7
142.00	141.77	5.29	0.36	5.3	3.9	5.8	36.9
143.00	142.77	5.38	0.41	5.4	4.4	5.9	33.8
144.00	143.76	5.46	0.46	5.5	4.9	5.6	33.8
145.00	144.76	5.55	0.52	5.6	5.3	5.5	32.9
146.00	145.75	5.63	0.57	5.7	5.8	5.5	34.5
147.00	146.75	5.71	0.62	5.7	6.2	5.6	34.0
148.00	147.74	5.80	0.68	5.8	6.7	6.0	35.1
149.00	148.74	5.88	0.74	5.9	7.1	5.7	34.2
150.00	149.73	5.96	0.79	6.0	7.5	5.7	32.0
151.00	150.73	6.05	0.84	6.1	7.9	5.6	30.6
152.00	151.72	6.13	0.89	6.2	8.3	5.5	33.9
153.00	152.72	6.21	0.94	6.3	8.6	5.8	31.0
154.00	153.71	6.30	0.99	6.4	9.0	5.9	28.8
155.00	154.71	6.38	1.04	6.5	9.3	5.8	30.8
156.00	155.70	6.47	1.09	6.6	9.6	5.8	24.7
157.00	156.70	6.56	1.14	6.7	9.9	6.0	28.1
158.00	157.69	6.65	1.19	6.8	10.1	5.8	24.4
159.00	158.69	6.75	1.23	6.9	10.3	5.8	23.8
160.00	159.68	6.84	1.26	7.0	10.4	5.6	22.1
161.00	160.68	6.93	1.29	7.0	10.6	5.8	23.7
162.00	161.67	7.02	1.32	7.1	10.6	6.0	7.7
163.00	162.67	7.13	1.33	7.3	10.6	6.4	2.2
164.00	163.66	7.24	1.34	7.4	10.5	7.3	356.8
165.00	164.65	7.36	1.35	7.5	10.4	6.0	4.8
166.00	165.65	7.48	1.36	7.6	10.3	7.3	3.8
167.00	166.64	7.59	1.37	7.7	10.2	6.3	5.5
168.00	167.64	7.70	1.38	7.8	10.2	6.6	11.4
169.00	168.63	7.81	1.40	7.9	10.2	6.8	351.4
170.00	169.62	7.92	1.41	8.0	10.1	6.4	5.8
171.00	170.62	8.03	1.43	8.2	10.1	6.1	11.1
171.62	171.19	8.09	1.44	8.2	10.1	6.2	10.6



TOOL CALIBRATION CM12-10 09/12/12 18:52
TOOL NUMBER: NEUTRON 4
SERIAL NUMBER: 08

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	PORCUT	Default	[CPS]		
3	May12,08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12,08	08:20:59	RES	10.000	[OHM]	7.000	[CPS]
4	May12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12,08	08:20:52	SP	382.000	[MV]	3462.000	[CPS]
5	Dec04,08	10:40:49	NEUTRC	0.000	[API-N]	0.000	[CPS]
	Dec04,08	10:40:49	NEUTRC	211.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

GAMMA-DENSITY (CPS) THROUGH RODS CM12-16

COMPANY	CENTURY WIRELINE SERVICES
WELL	CM12-16
FIELD	
COUNTY	
PROVINCE	ALBERTA
COUNTRY	CANADA
SERVICE ORDER	
SECTION	N/A
TOWNSHIP	N/A
RANGE	N/A
LICENSE NO.	N/A
PERMANENT DATUM	GL
LOG MEASURED FROM	GL
DRL MEASURED FROM	GL
DATE	10/11/12
RUN NUMBER	ONE
DEPTH DRILLER	1910.0
BIT SIZE	120.65
LOG TOP	0.00
LOG BOTTOM	79.99
CASING LOGGER	N/A
CASING DRILLER	N/A
CASING TYPE	SURFACE
BOREHOLE FLUID	WATER
RM TEMPERATURE	N/A
MUD RES	N/A
MUD RES TEMPERATURE	N/A
WITNESSED BY	NORWEST
RECORDED BY	A.SHAKYY
REMARKS 1	OPEN HOLE BROKEN AT 77M
REMARKS 2	

CONFIDENTIAL FILE NO. 77-2-2

CONFIDENTIAL INFORMATION EXPLORATION

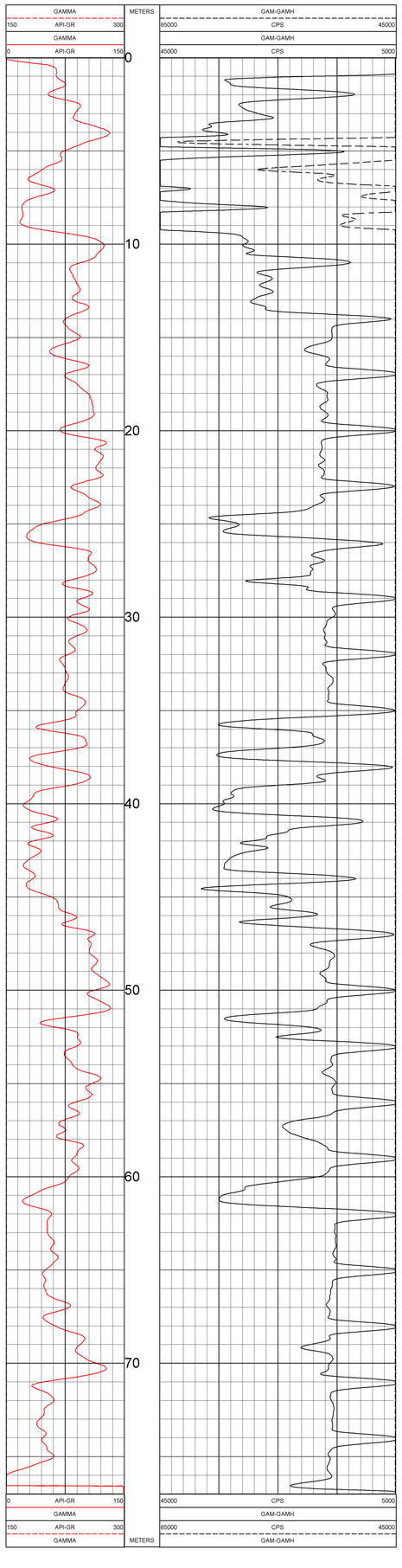
OTHER SERVICES: NEG.,N

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DENSITY THROUGH RODS 1:100 CM12-16 10/11/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-TR.0 09/03/2012	VERSION = 3.64KF



DENSITY THROUGH RODS 1:100 CM12-16 10/11/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-TR.0 09/03/2012	VERSION = 3.64KF

TOOL CALIBRATION CM12-16 10/11/12 17:10
TOOL 9068A TM VERSION 1
SERIAL NUMBER 643

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug26,12	07:52:32	GAMMA	Default	[CPS]	Default	[CPS]
	Aug26,12	07:52:32	GAMMA	545.000	[API-GR]	195.000	[CPS]

Century WIRELINE SERVICES

GAMMA - NEUTRON
THROUGH RODS
CM12-16

COMPANY	CROWN MOUNTAIN EXPLORATION
WELL	CM12-16
FIELD	N/A
COUNTRY	CANADA
PROVINCE	ALBERTA
SEC	N/A
TOWNSHIP	N/A
RANGE	N/A
LICENSE NO.	N/A
LOG MEASURED FROM GL	N/A
DRILLING MEASURED FROM GL	N/A

OTHER SERVICES
DEN-TH

DATE	10/11/12
RUN NUMBER	ONE
DEPTH DRILLER	3300
LOG TOP	0
LOG BOTTOM	3298
CASING LOGGER	77.17
CASING DRILLER	0.19
BIT SIZE	77.00
TYPE FLUID	WATER
DENSITY	1.0
LEVEL	FULL
MAX REC. TEMP.	77.00
EQUIP. LOCATION	3-1-WICK
RECORDED BY	A.SPAKAYY
WITNESSED BY	MR. WRIGHT

ELEVATION KB	N/A
ELEVATION DF	N/A
ELEVATION GL	N/A

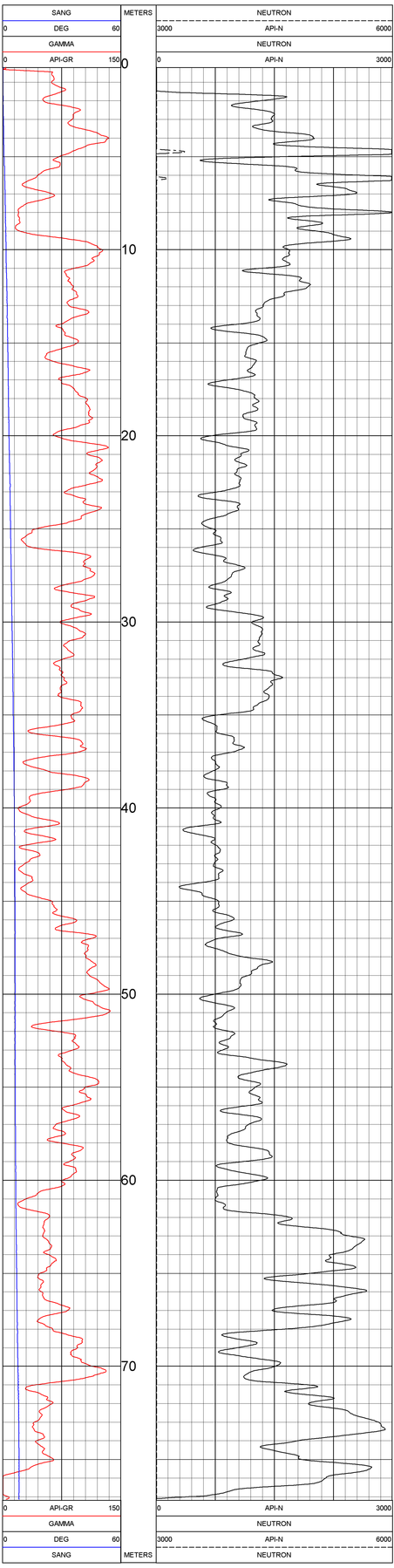
REMARKS 1
REMARKS 2
OPEN HOLE BRIDGED AT 7.70M

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

NEUTRON THROUGH RODS 1:100 CM12-16 10/11/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE =	2012-CROWN_NEUTRON-TR.0 08/26/2012	VERSION = 3.64KF



NEUTRON THROUGH RODS 1:100 CM12-16 10/11/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE =	2012-CROWN_NEUTRON-TR.0 08/26/2012	VERSION = 3.64KF

TOOL CALIBRATION CM12-16 10/11/12 17:36
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	POROSIT	Default	[CPS]		
3	May12,08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12,08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04,09	10:40:49	NEUTRON	0.000	[API-N]	1.000	[CPS]
	Dec04,09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-17

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-17
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:10/08/12	RIG NUMBER	:GED
DEPTH DRILLER	:148.00	LOGGER TD	:148.00
BIT SIZE	:120.65	ARRIVAL TIME	:23:00
LOG TOP	:0.00	DEPARTURE TIME	:04:30
LOG BOTTOM	:147.63	CIRC STOPPED	:N/A
CASING LOGGER	:6.40		
CASING DRILLER	:6.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

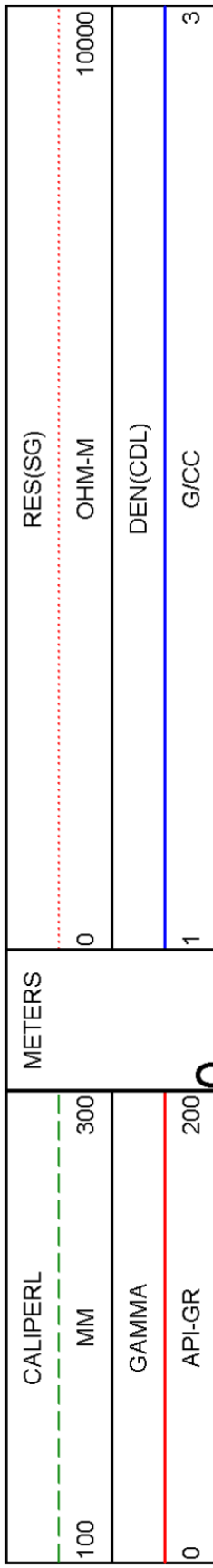
DENSITY 1:100 CM12-17 10/08/12

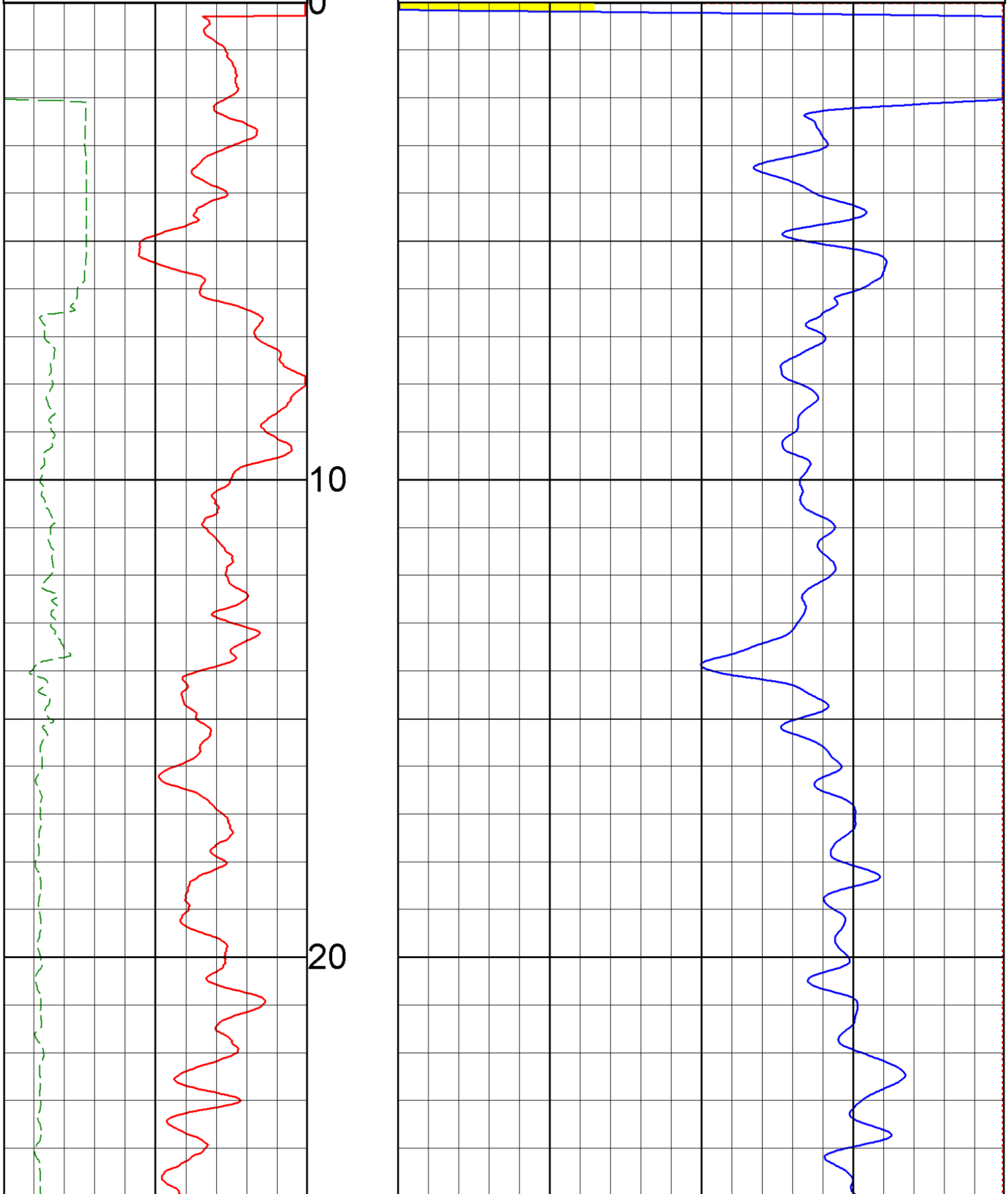
LOG PARAMETERS

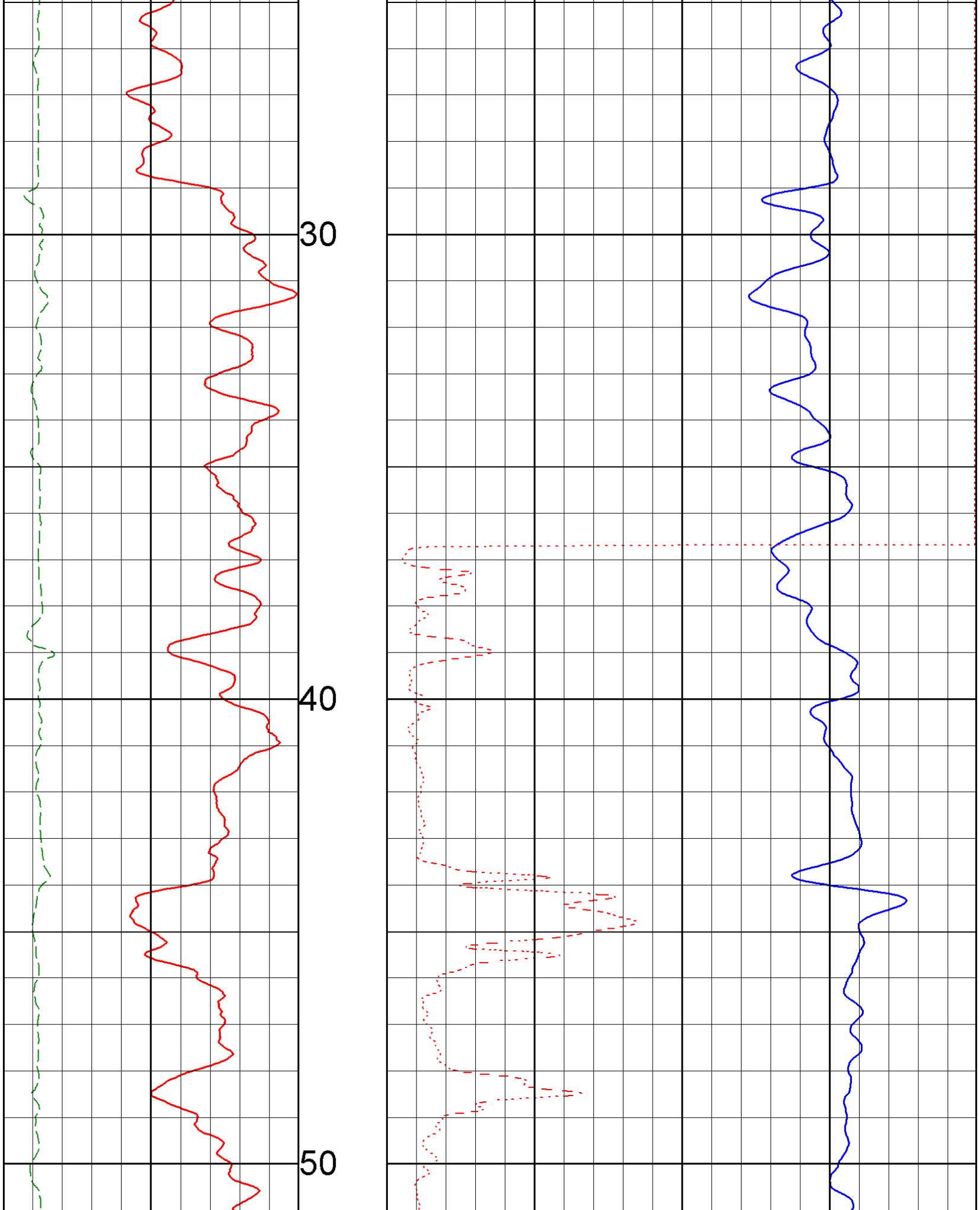
MATRIX DENSITY : 2.65
MAGNETIC DECL : 15.3
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012

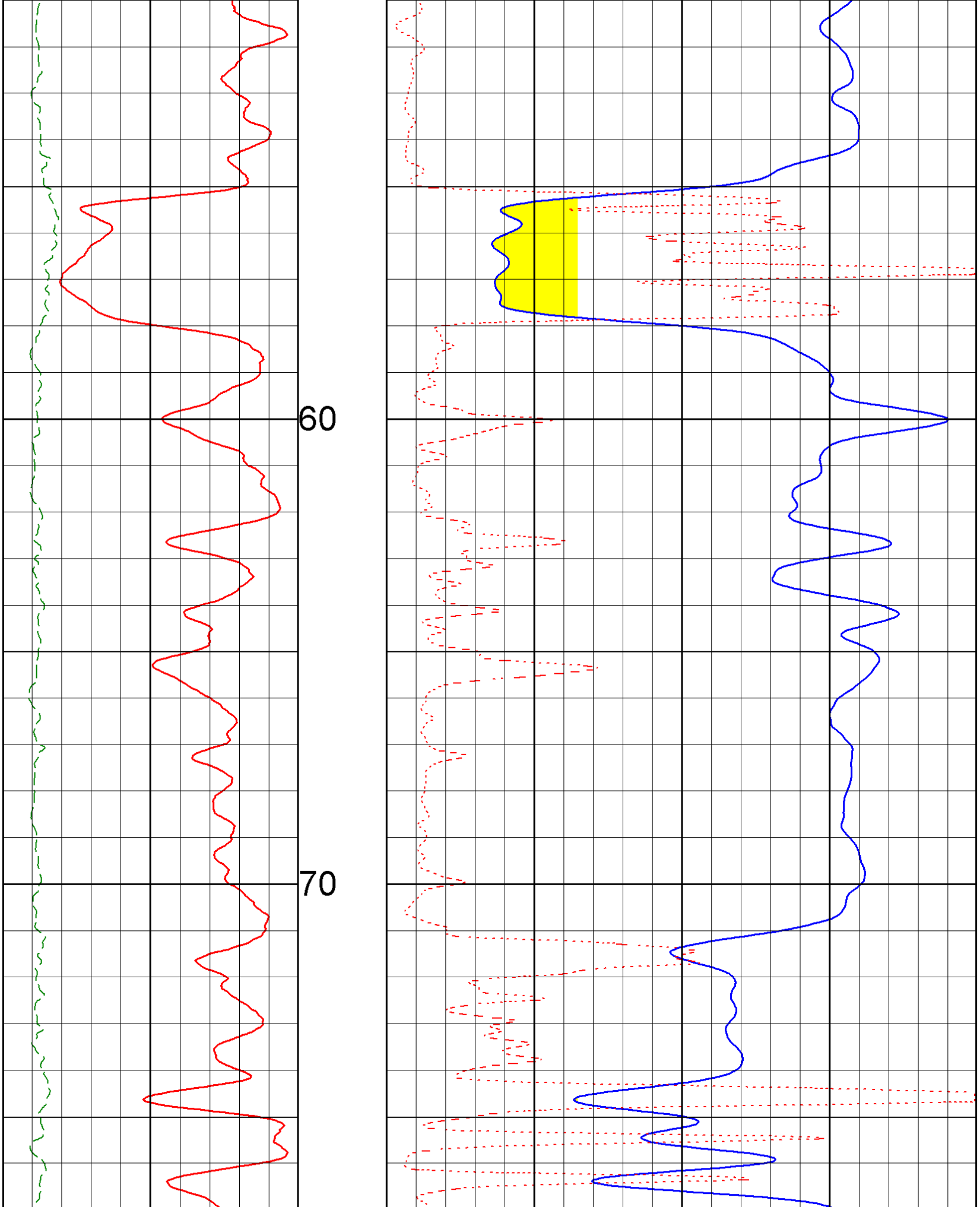
NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

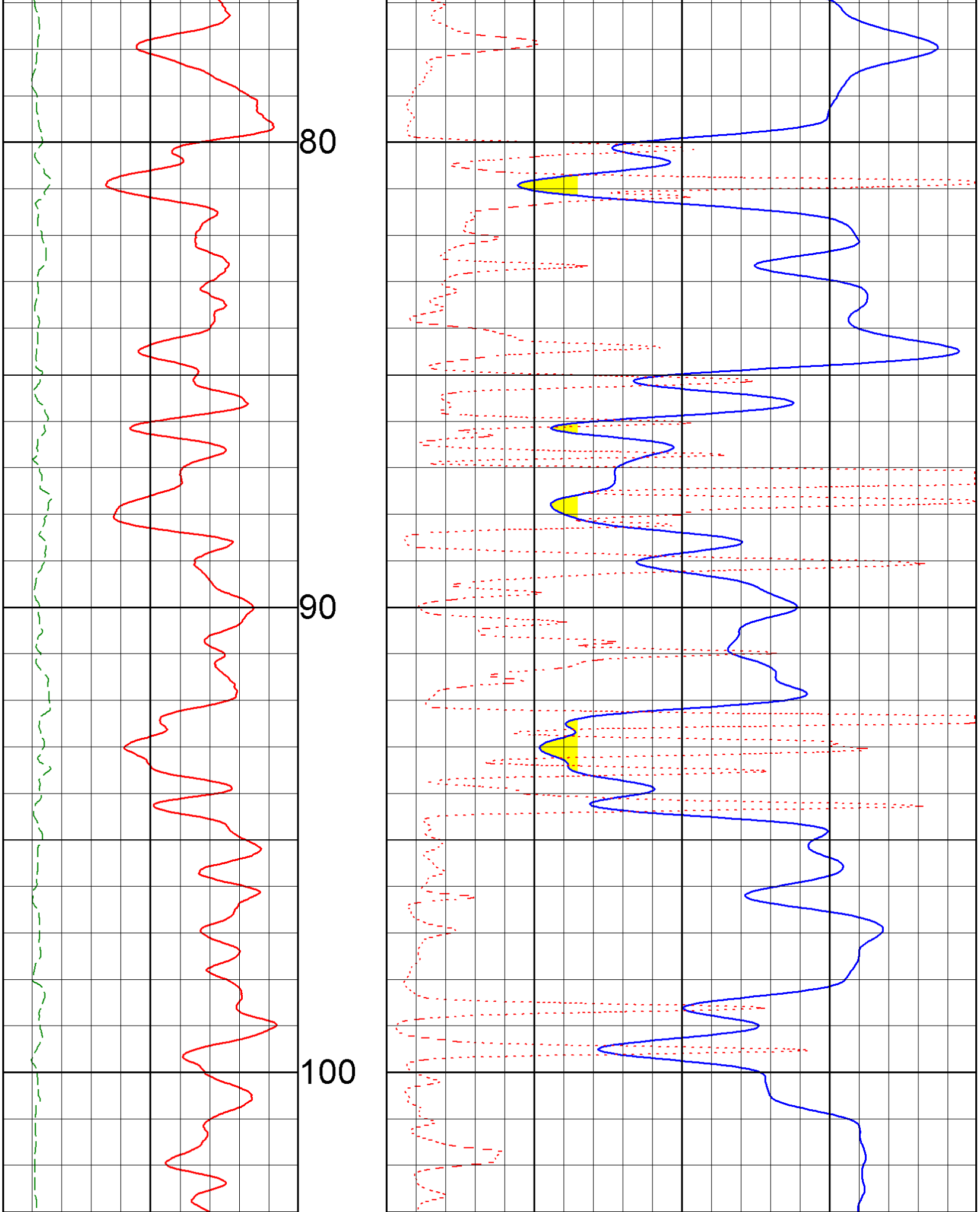
MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KF

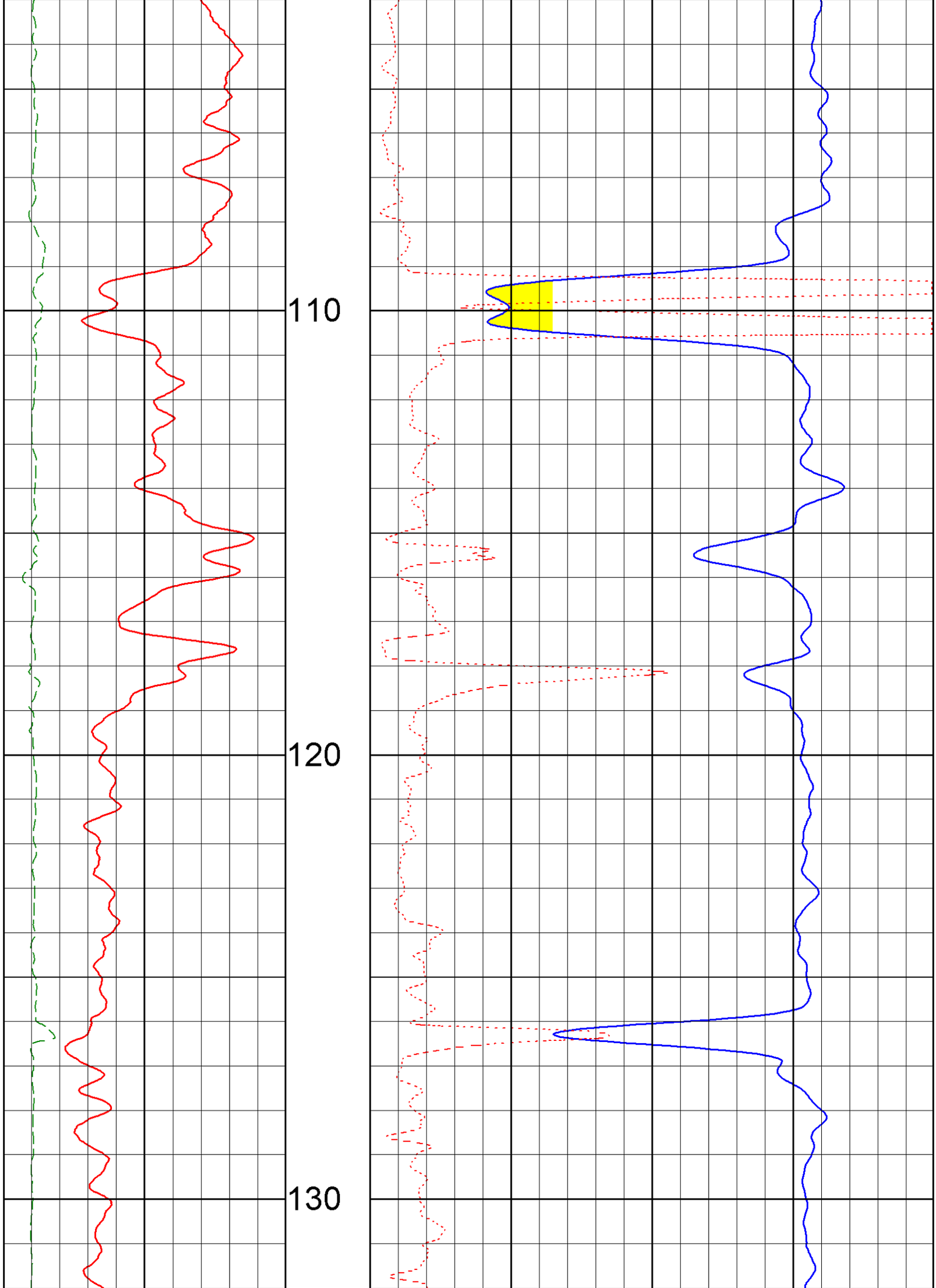


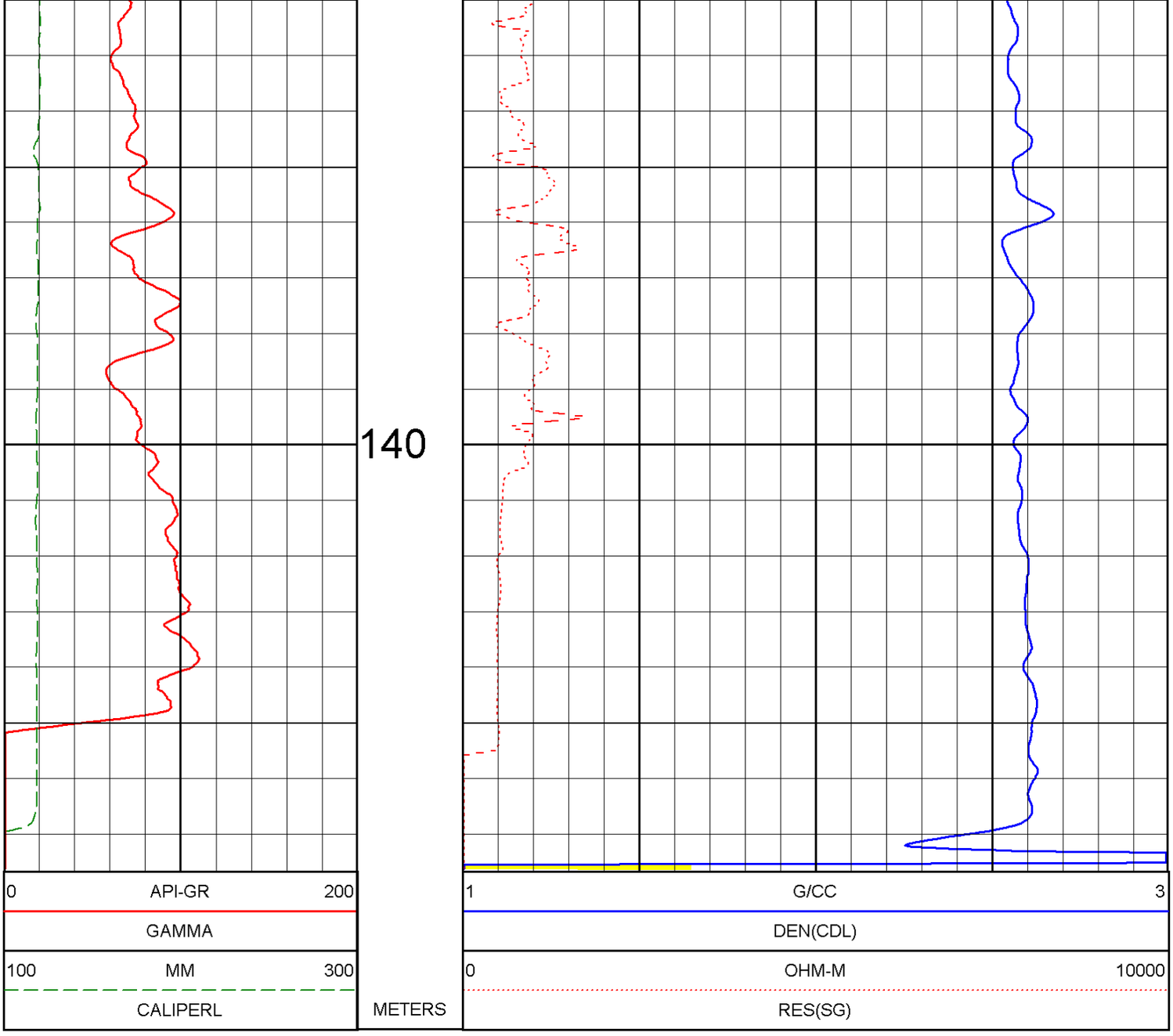

0
10
20


30
40
50


60
70


80
90
100


110
120
130



DENSITY 1:100 CM12-17 10/08/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM12-17 10/08/12 03:28
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

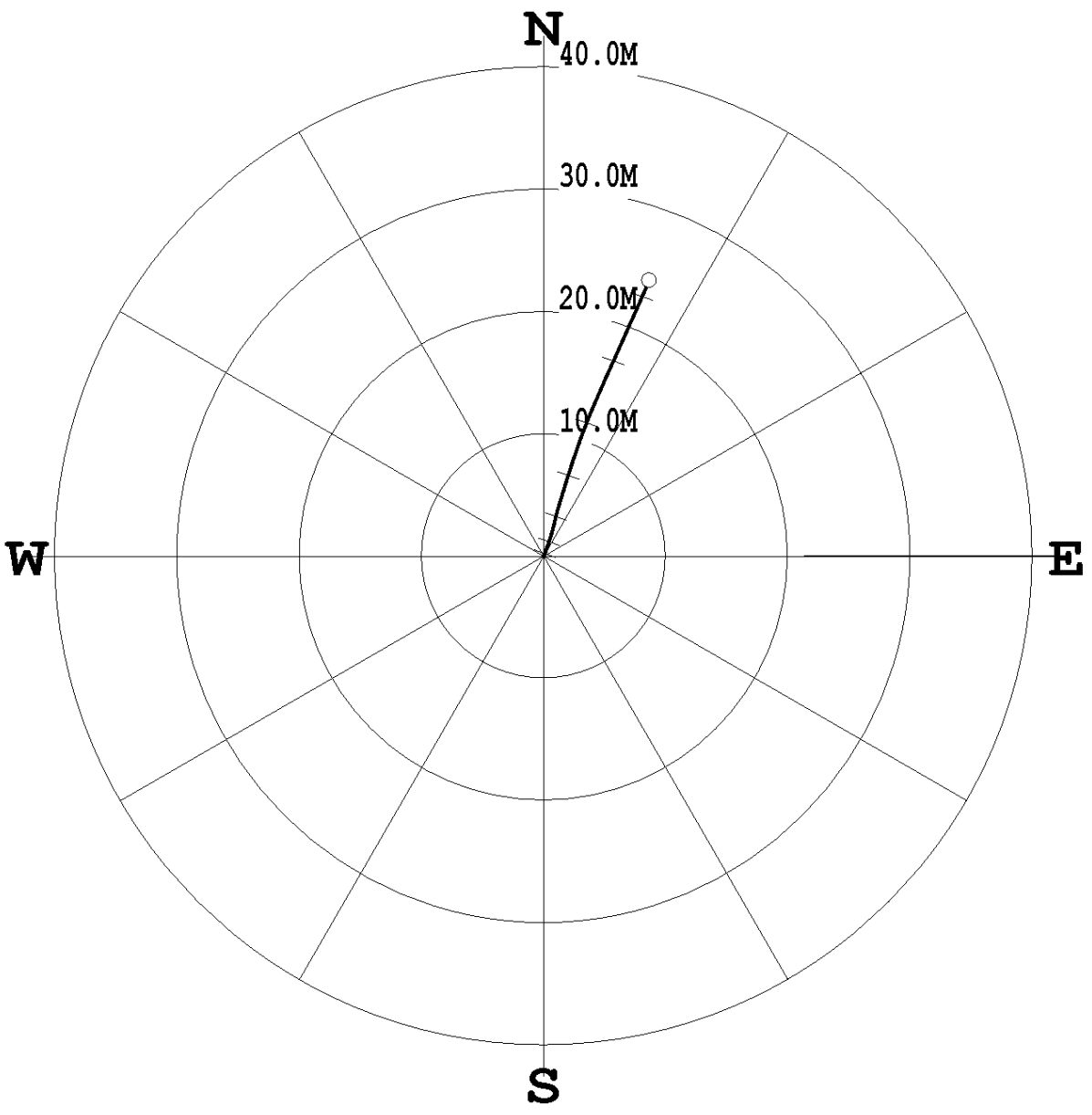
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Oct08,12	03:48:08	DEN(SS)	1.590	[G/CC]	52210.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-17
DATE OF LOG: 10/08/12
PROBE: 9055A 59

MAG DECL: 15.3

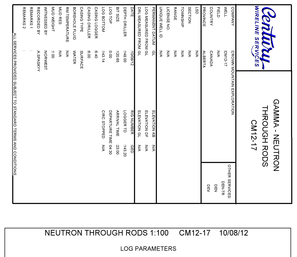
SCALE: 5 M/CM
TRUE DEPTH: 144.93 M
AZIMUTH: 21.0
DISTANCE: 24.1 M
+ = 20 M INCR
○ = BOTTOM OF HOLE

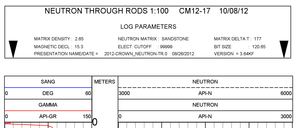


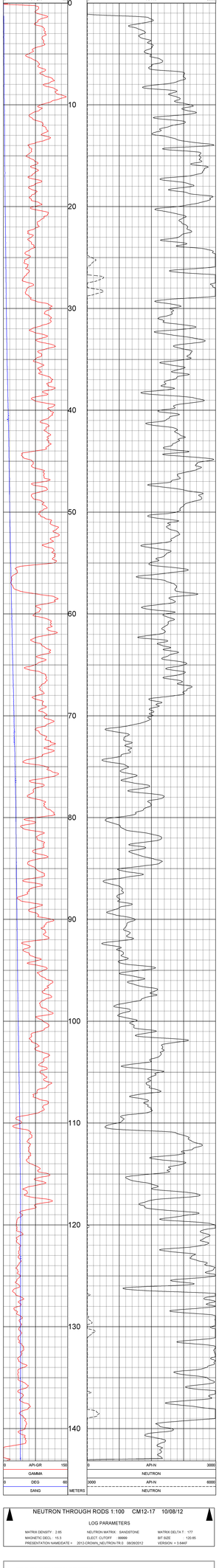
* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

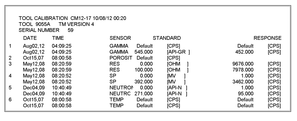
CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY GEO
DATA FROM : N/A
MAG. DECL. : 15.300
HOLE ID. : CM12-17
DATE OF LOG : 10/08/12
PROBE : 9055A , 59
DEPTH UNITS : METERS
LOG: CM12-17_10-08-12_02-55_9055A_.02_9.00_147.66_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
9.02	9.02	-0.00	0.00	0.0	90.9	0.9	90.9
10.00	10.00	0.01	0.01	0.0	28.1	0.7	33.4
11.00	11.00	0.03	0.02	0.0	27.3	1.5	40.5
12.00	12.00	0.05	0.02	0.1	26.1	1.0	10.5
13.00	13.00	0.07	0.03	0.1	26.9	1.2	31.5
14.00	14.00	0.08	0.04	0.1	27.5	1.1	25.6
15.00	15.00	0.10	0.05	0.1	27.1	1.0	22.6
16.00	16.00	0.11	0.06	0.1	27.2	1.2	33.6
17.00	17.00	0.14	0.07	0.2	26.5	1.2	20.1
18.00	18.00	0.16	0.08	0.2	26.4	1.3	16.6
19.00	19.00	0.18	0.09	0.2	26.1	1.6	23.4
20.00	20.00	0.21	0.10	0.2	25.4	1.6	15.1
21.00	21.00	0.24	0.11	0.3	24.9	2.0	18.8
22.00	22.00	0.27	0.12	0.3	24.4	2.2	26.2
23.00	23.00	0.30	0.13	0.3	23.9	2.0	22.3
24.00	23.99	0.34	0.15	0.4	23.3	2.0	13.4
25.00	24.99	0.38	0.16	0.4	22.6	2.4	15.6
26.00	25.99	0.42	0.17	0.4	22.0	2.3	13.5
27.00	26.99	0.46	0.18	0.5	21.7	2.5	25.5
28.00	27.99	0.50	0.20	0.5	21.6	2.3	25.4
29.00	28.99	0.54	0.21	0.6	21.4	2.6	10.9
30.00	29.99	0.58	0.23	0.6	21.3	3.0	20.8
31.00	30.99	0.63	0.24	0.7	21.1	3.4	16.7
32.00	31.99	0.68	0.26	0.7	20.8	3.2	18.6
33.00	32.99	0.73	0.28	0.8	20.7	2.8	24.3
34.00	33.98	0.79	0.30	0.8	20.7	3.4	17.3
35.00	34.98	0.84	0.32	0.9	20.6	3.4	17.0
36.00	35.98	0.90	0.34	1.0	20.3	3.9	17.6
37.00	36.98	0.96	0.36	1.0	20.5	3.9	22.1
38.00	37.98	1.03	0.38	1.1	20.4	4.2	13.9
39.00	38.97	1.10	0.41	1.2	20.2	4.3	15.6
40.00	39.97	1.18	0.43	1.3	20.1	4.3	15.9
41.00	40.97	1.26	0.45	1.3	19.9	4.5	15.9
42.00	41.96	1.33	0.48	1.4	20.0	5.0	22.6
43.00	42.96	1.42	0.51	1.5	19.9	5.2	17.6
44.00	43.95	1.51	0.54	1.6	19.7	5.9	16.0
45.00	44.95	1.60	0.57	1.7	19.6	5.2	17.1
46.00	45.94	1.68	0.60	1.8	19.5	5.3	18.5
47.00	46.94	1.78	0.63	1.9	19.4	5.7	17.9
48.00	47.94	1.87	0.65	2.0	19.3	5.9	15.2
49.00	48.93	1.97	0.68	2.1	19.1	5.5	18.4
50.00	49.92	2.07	0.71	2.2	18.8	5.7	14.3
51.00	50.92	2.17	0.73	2.3	18.6	6.0	9.5
52.00	51.91	2.27	0.76	2.4	18.4	5.9	19.1
53.00	52.91	2.37	0.79	2.5	18.4	6.5	18.8
54.00	53.90	2.48	0.82	2.6	18.2	6.8	15.7
55.00	54.89	2.60	0.85	2.7	18.1	7.0	11.8
56.00	55.89	2.72	0.87	2.9	17.8	7.1	16.8
57.00	56.88	2.84	0.91	3.0	17.7	7.2	15.2
58.00	57.87	2.96	0.94	3.1	17.6	7.0	17.8
59.00	58.86	3.09	0.97	3.2	17.5	7.9	11.3
60.00	59.85	3.22	1.00	3.4	17.3	8.5	7.6
61.00	60.84	3.36	1.04	3.5	17.2	8.1	14.9
62.00	61.83	3.49	1.07	3.7	17.0	8.2	15.7
63.00	62.82	3.63	1.11	3.8	17.0	8.2	16.9
64.00	63.81	3.78	1.15	4.0	16.9	8.8	14.0
65.00	64.80	3.93	1.19	4.1	16.9	8.9	16.2
66.00	65.79	4.08	1.23	4.3	16.9	9.0	17.8
67.00	66.77	4.23	1.28	4.4	16.8	9.0	20.2
68.00	67.76	4.38	1.32	4.6	16.8	9.2	17.0
69.00	68.75	4.54	1.37	4.7	16.8	10.0	12.9
70.00	69.73	4.70	1.42	4.9	16.8	9.7	15.6
71.00	70.72	4.86	1.47	5.1	16.8	10.2	21.6
72.00	71.70	5.03	1.53	5.3	16.9	10.3	17.9
73.00	72.69	5.20	1.57	5.4	16.8	10.5	11.2
74.00	73.67	5.38	1.63	5.6	16.9	10.8	20.0
75.00	74.65	5.56	1.69	5.8	16.9	11.2	15.9
76.00	75.63	5.75	1.74	6.0	16.9	11.3	15.2
77.00	76.61	5.94	1.80	6.2	16.8	11.2	16.8
78.00	77.59	6.13	1.86	6.4	16.9	11.5	17.0
79.00	78.57	6.32	1.92	6.6	16.9	11.4	19.9
80.00	79.55	6.51	1.98	6.8	16.9	11.8	17.1
81.00	80.53	6.70	2.05	7.0	17.0	11.7	17.6
82.00	81.51	6.90	2.11	7.2	17.0	11.9	16.8
83.00	82.49	7.10	2.17	7.4	17.0	12.0	17.7
84.00	83.46	7.30	2.23	7.6	17.0	12.0	17.7
85.00	84.44	7.50	2.30	7.8	17.0	12.6	17.0
86.00	85.42	7.71	2.36	8.1	17.1	12.5	18.3
87.00	86.39	7.91	2.43	8.3	17.1	13.3	20.5
88.00	87.37	8.12	2.51	8.5	17.2	12.6	19.2
89.00	88.35	8.32	2.58	8.7	17.2	13.0	19.8
90.00	89.32	8.53	2.65	8.9	17.2	12.7	19.3
91.00	90.30	8.74	2.72	9.2	17.3	13.2	17.8
92.00	91.27	8.95	2.80	9.4	17.3	13.2	18.6
93.00	92.25	9.17	2.87	9.6	17.4	13.1	19.4
94.00	93.22	9.38	2.94	9.8	17.4	13.3	20.3
95.00	94.19	9.59	3.02	10.1	17.5	13.6	18.0
96.00	95.17	9.80	3.10	10.3	17.5	12.6	22.4
97.00	96.14	10.02	3.18	10.5	17.6	13.6	20.0
98.00	97.11	10.24	3.26	10.7	17.7	13.7	20.9
99.00	98.08	10.46	3.35	11.0	17.7	13.7	21.9
100.00	99.06	10.68	3.43	11.2	17.8	13.6	20.2
101.00	100.03	10.91	3.52	11.5	17.9	13.9	20.8
102.00	101.00	11.13	3.60	11.7	17.9	14.1	20.9
103.00	101.97	11.36	3.69	11.9	18.0	14.3	21.2
104.00	102.93	11.59	3.79	12.2	18.1	14.8	22.6
105.00	103.90	11.82	3.89	12.4	18.2	14.9	22.9
106.00	104.87	12.06	3.99	12.7	18.3	15.1	23.3
107.00	105.83	12.30	4.09	13.0	18.4	14.9	23.0
108.00	106.80	12.54	4.20	13.2	18.5	15.2	23.8
109.00	107.76	12.78	4.30	13.5	18.6	15.0	24.2
110.00	108.73	13.02	4.41	13.7	18.7	15.3	23.3
111.00	109.69	13.27	4.51	14.0	18.8	15.6	23.2
112.00	110.66	13.51	4.62	14.3	18.9	15.7	23.7
113.00	111.62	13.76	4.73	14.5	19.0	15.6	23.7
114.00	112.58	14.00	4.84	14.8	19.1	15.9	23.3
115.00	113.54	14.26	4.95	15.1	19.1	16.1	23.2
116.00	114.51	14.51	5.05	15.4	19.2	15.7	23.3
117.00	115.47	14.76	5.16	15.6	19.3	16.0	24.1
118.00	116.43	15.01	5.28	15.9	19.4	15.7	24.6
119.00	117.39	15.27	5.40	16.2	19.5	16.0	25.1
120.00	118.35	15.52	5.51	16.5	19.6	16.0	24.1
121.00	119.31	15.77	5.63	16.7	19.6	16.0	24.5
122.00	120.27	16.02	5.74	17.0	19.7	16.1	24.1
123.00	121.23	16.28	5.86	17.3	19.8	15.9	24.4
124.00	122.19	16.53	5.97	17.6	19.9	16.0	24.2
125.00	123.15	16.78	6.08	17.8	19.9	16.0	23.8
126.00	124.11	17.03	6.19	18.1	20.0	16.3	23.5
127.00	125.07	17.29	6.31	18.4	20.0	16.0	23.9
128.00	126.04	17.54	6.42	18.7	20.1	16.0	24.2
129.00	127.00	17.79	6.53	19.0	20.2	16.3	24.2
130.00	127.96	18.05	6.65	19.2	20.2	16.1	24.3
131.00	128.92	18.30	6.76	19.5	20.3	16.0	23.9
132.00	129.88	18.55	6.87	19.8	20.3	16.1	24.1
133.00	130.84	18.80	6.99	20.1	20.4	16.5	23.8
134.00	131.80	19.06	7.10	20.3	20.4	16.5	22.9
135.00	132.76	19.31	7.21	20.6	20.5	15.6	24.7
136.00	133.72	19.56	7.32	20.9	20.5	16.1	23.9
137.00	134.68	19.81	7.44	21.2	20.6	16.1	24.0
138.00	135.64	20.06	7.55	21.4	20.6	16.2	23.8
139.00	136.61	20.32	7.66	21.7	20.7	15.9	24.3
140.00	137.57	20.57	7.77	22.0	20.7	16.1	23.8
141.00	138.53	20.83	7.89	22.3	20.7	16.1	23.8
142.00	139.49	21.08	8.00	22.5	20.8	16.2	23.5
143.00	140.45	21.34	8.11	22.8	20.8	16.2	23.9
144.00	141.41	21.59	8.22	23.1	20.9	16.1	23.9
145.00	142.37	21.84	8.34	23.4	20.9	15.9	24.0
146.00	143.33	22.10	8.45	23.7	20.9	16.0	23.5
147.00	144.29	22.35	8.56	23.9	21.0	15.9	23.1
147.66	144.89	22.51	8.62	24.1	21.0	16.1	23.4









TOOL CALIBRATION CM12-17 10/08/12 00:20
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02.12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02.12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15.07	08:00:58	POROSIT	Default	[CPS]		
3	May12.08	08:20:52	RES	10.000	[OHM]	9676.000	[CPS]
	May12.08	08:20:52	RES	100.000	[OHM]	7978.000	[CPS]
4	May12.08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12.08	08:20:52	SP	382.000	[MV]	3482.000	[CPS]
5	Dec04.09	10:40:49	NEUTRCR	0.000	[API-N]	1.000	[CPS]
	Dec04.09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15.07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15.07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-18

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-18
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:09/07/12	RIG NUMBER	:GED
DEPTH DRILLER	:231.00	LOGGER TD	:231.00
BIT SIZE	:120.65	ARRIVAL TIME	:18:00
LOG TOP	:0.00	DEPARTURE TIME	:00:30
LOG BOTTOM	:230.88	CIRC STOPPED	:N/A
CASING LOGGER	:6.00		
CASING DRILLER	:6.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

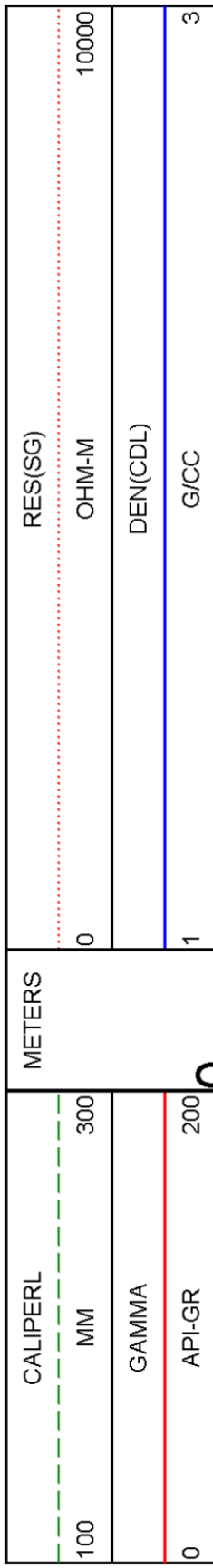
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

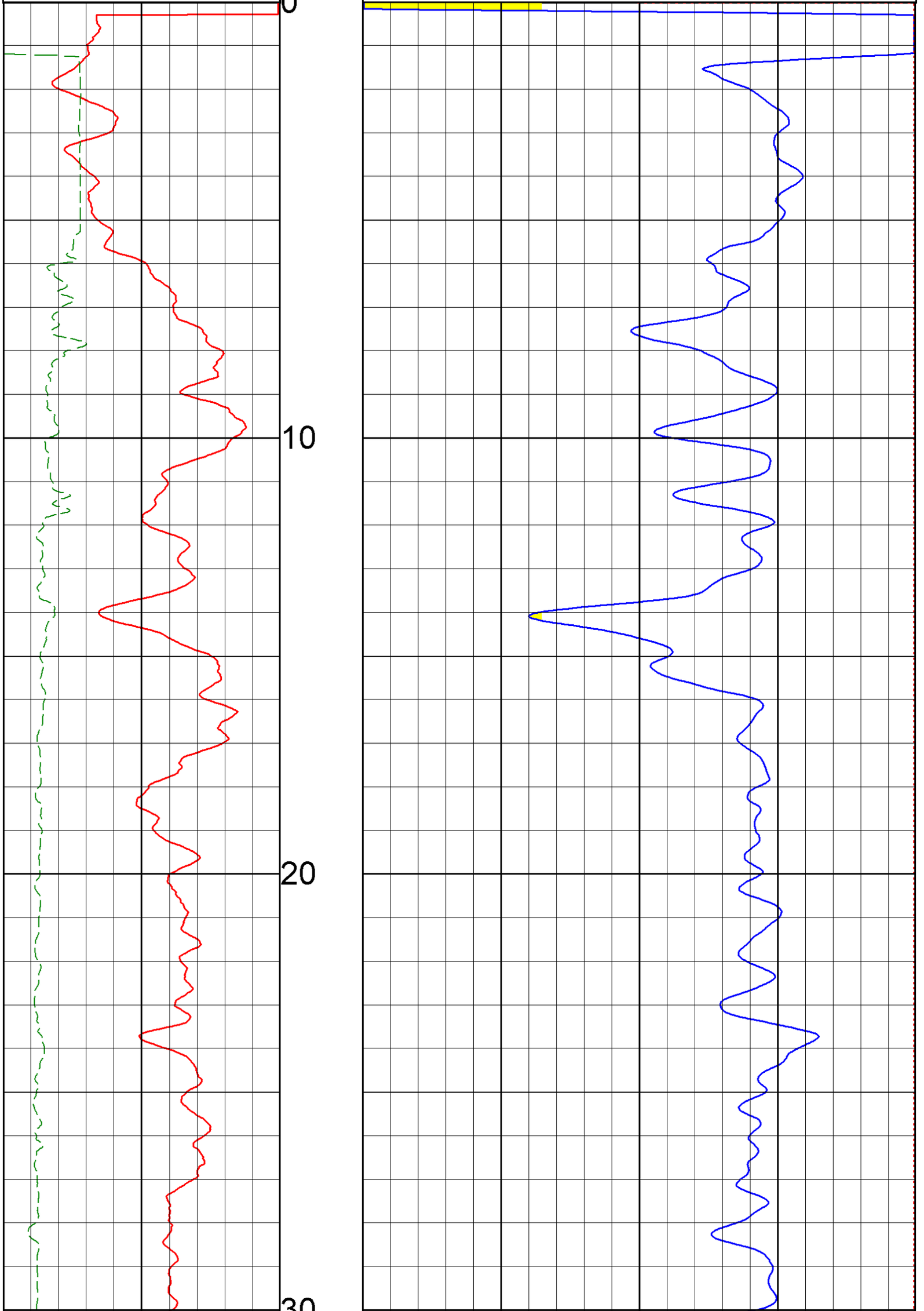
DENSITY 1:100 CM12-18 09/07/12

LOG PARAMETERS

MATRIX DENSITY :	2.65	NEUTRON MATRIX :	SANDSTONE
MAGNETIC DECL :	15.3	ELECT. CUTOFF	: 99999
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-RES.0 08/21/2012		

MATRIX DELTA T :	177
BIT SIZE	: 120.65
VERSION	= 3.64KF

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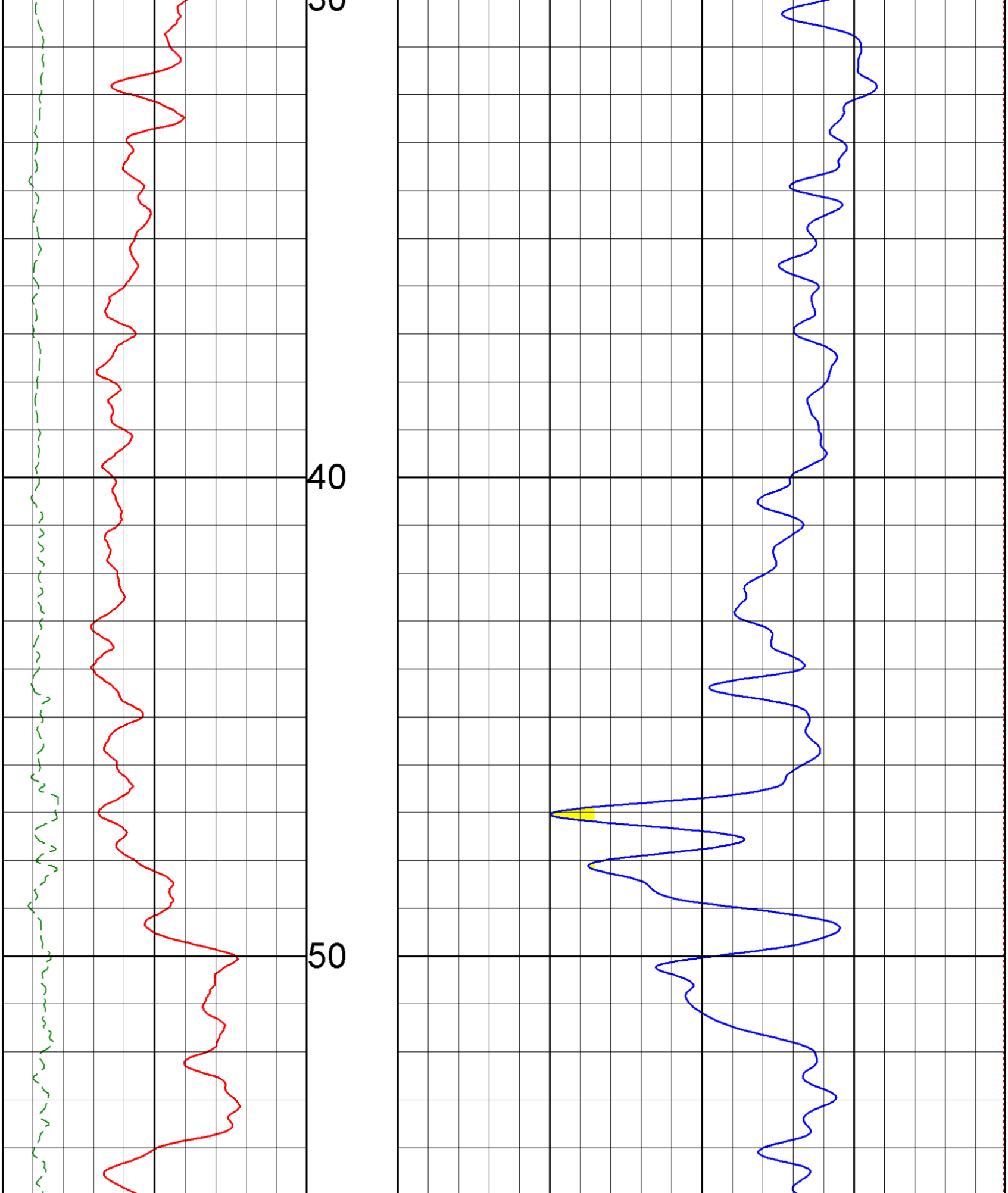
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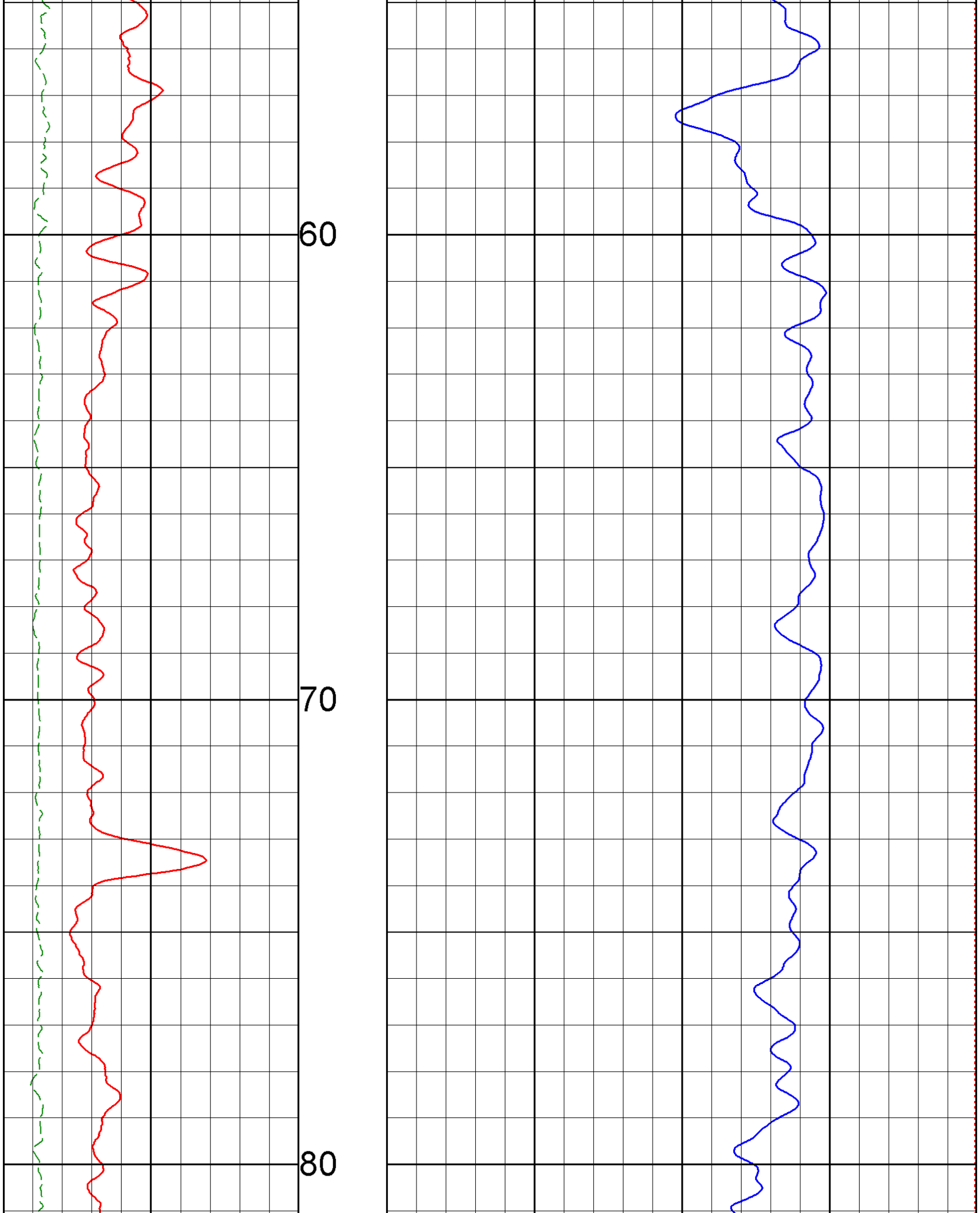
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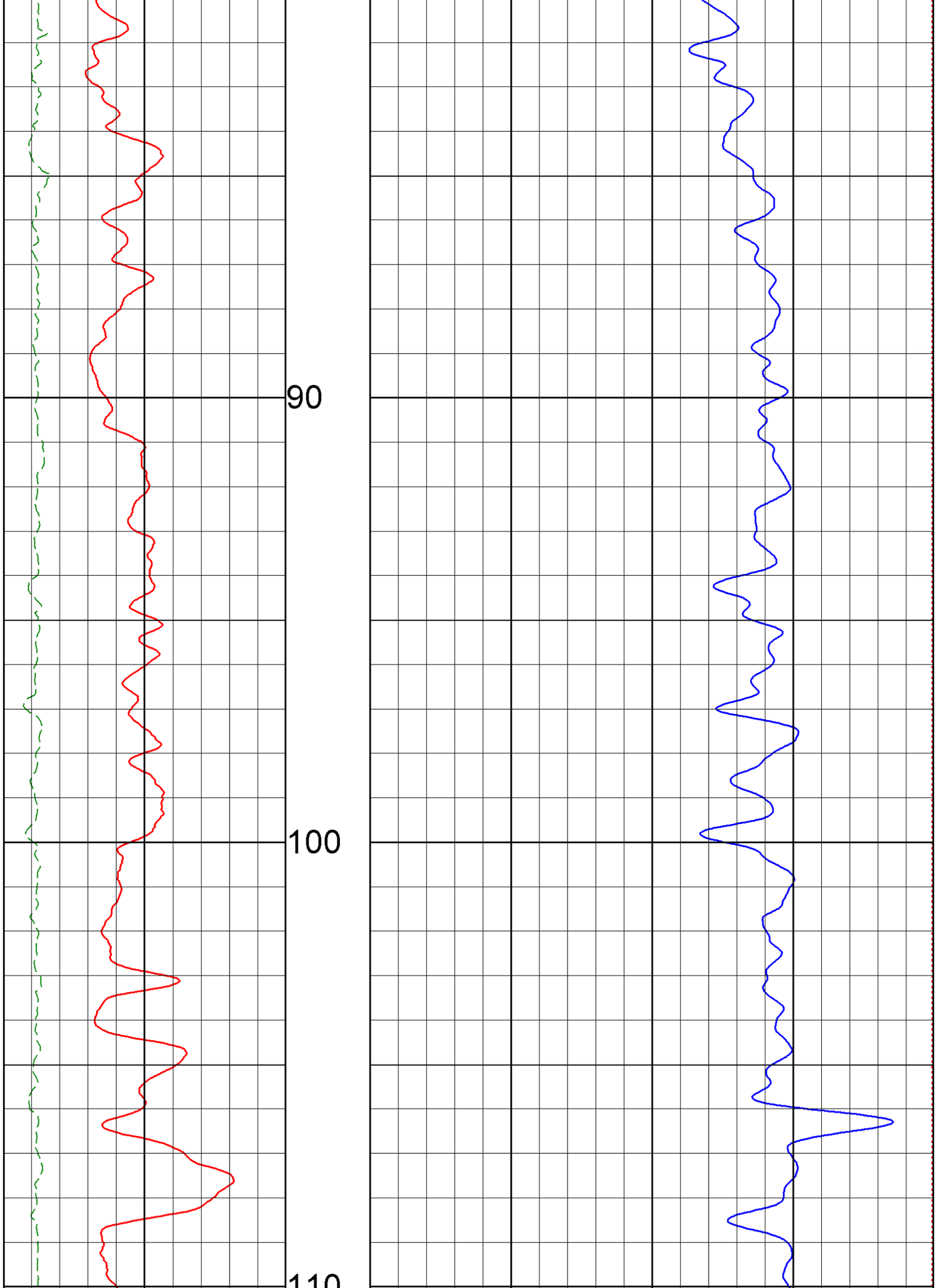
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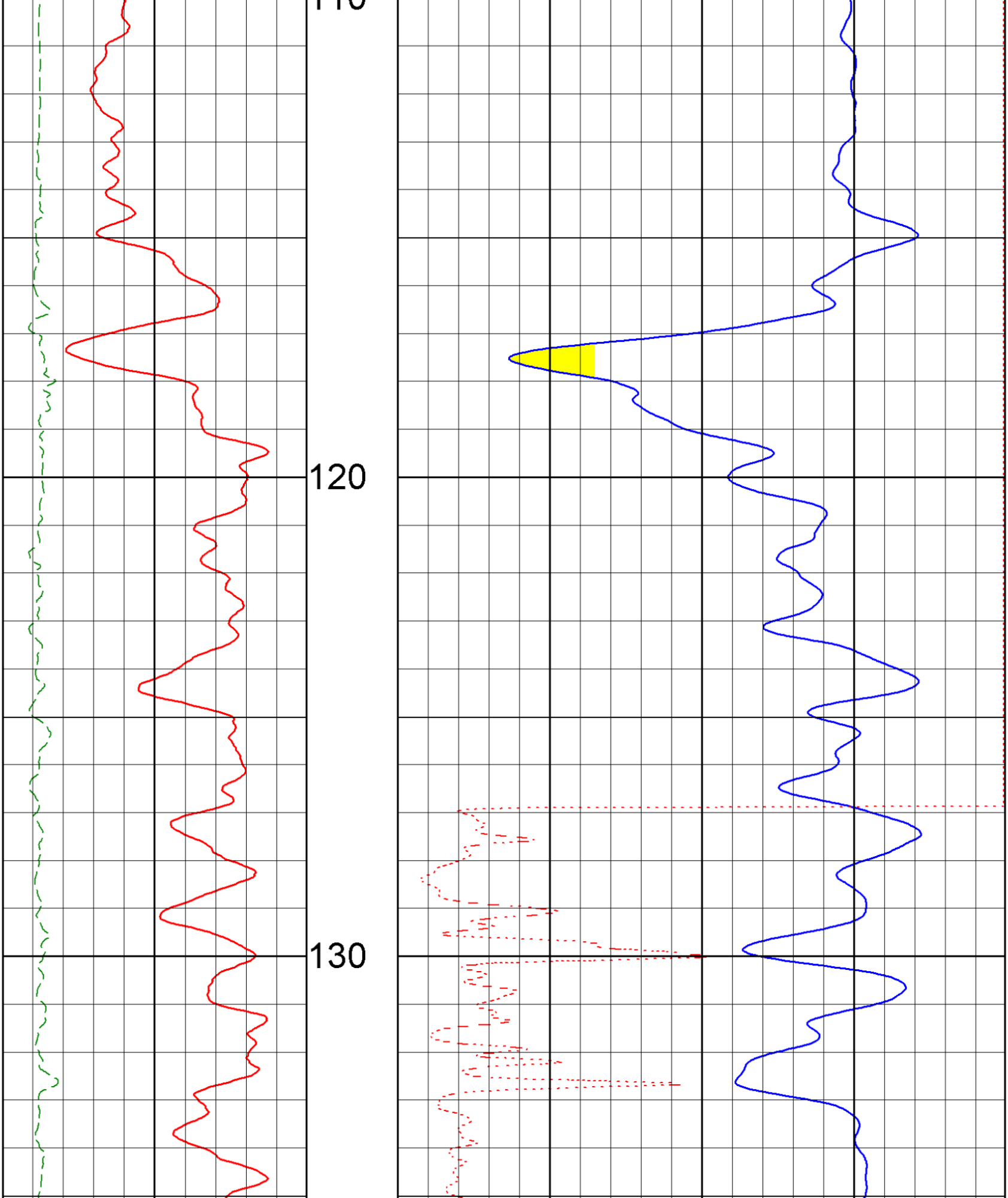
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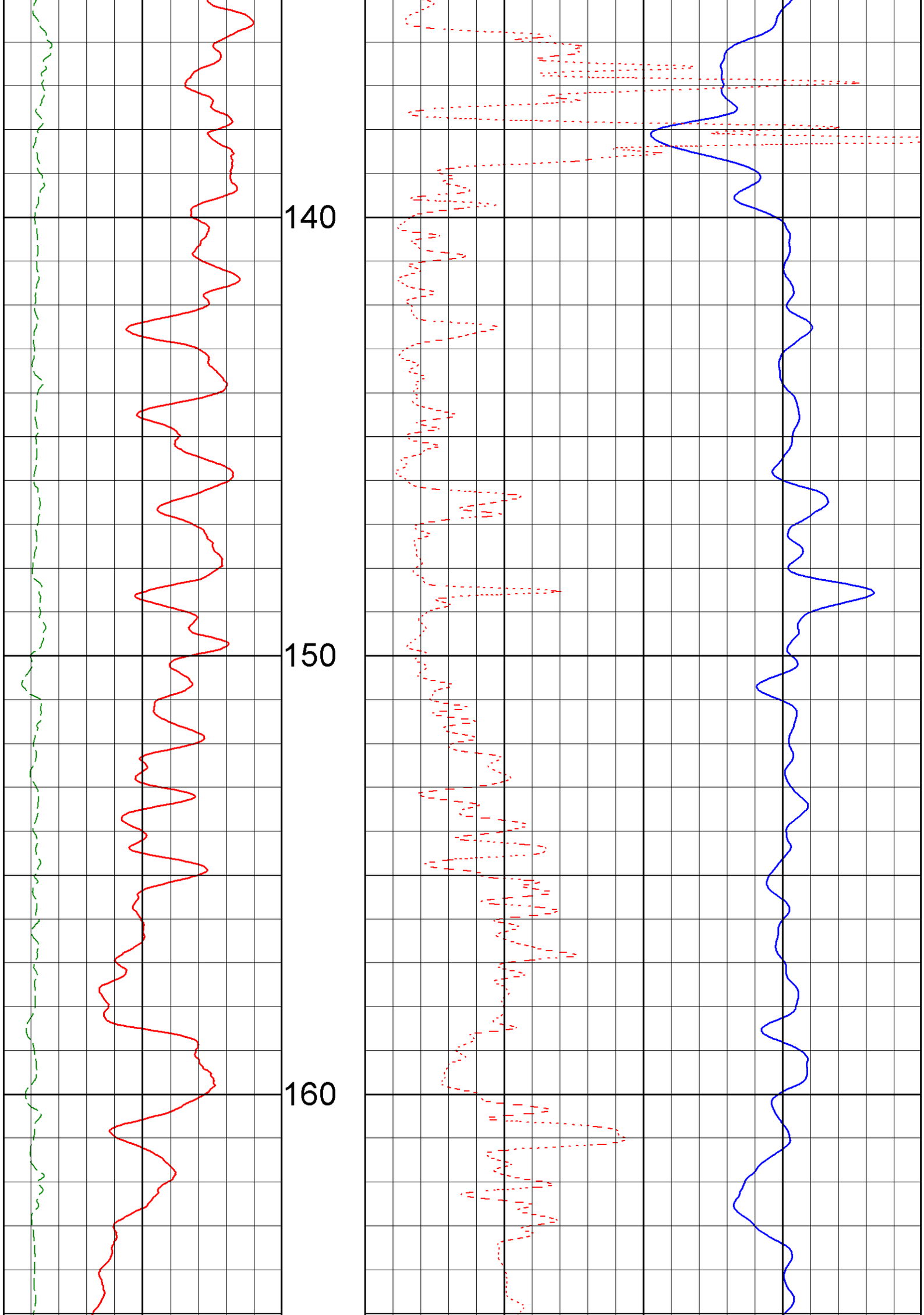
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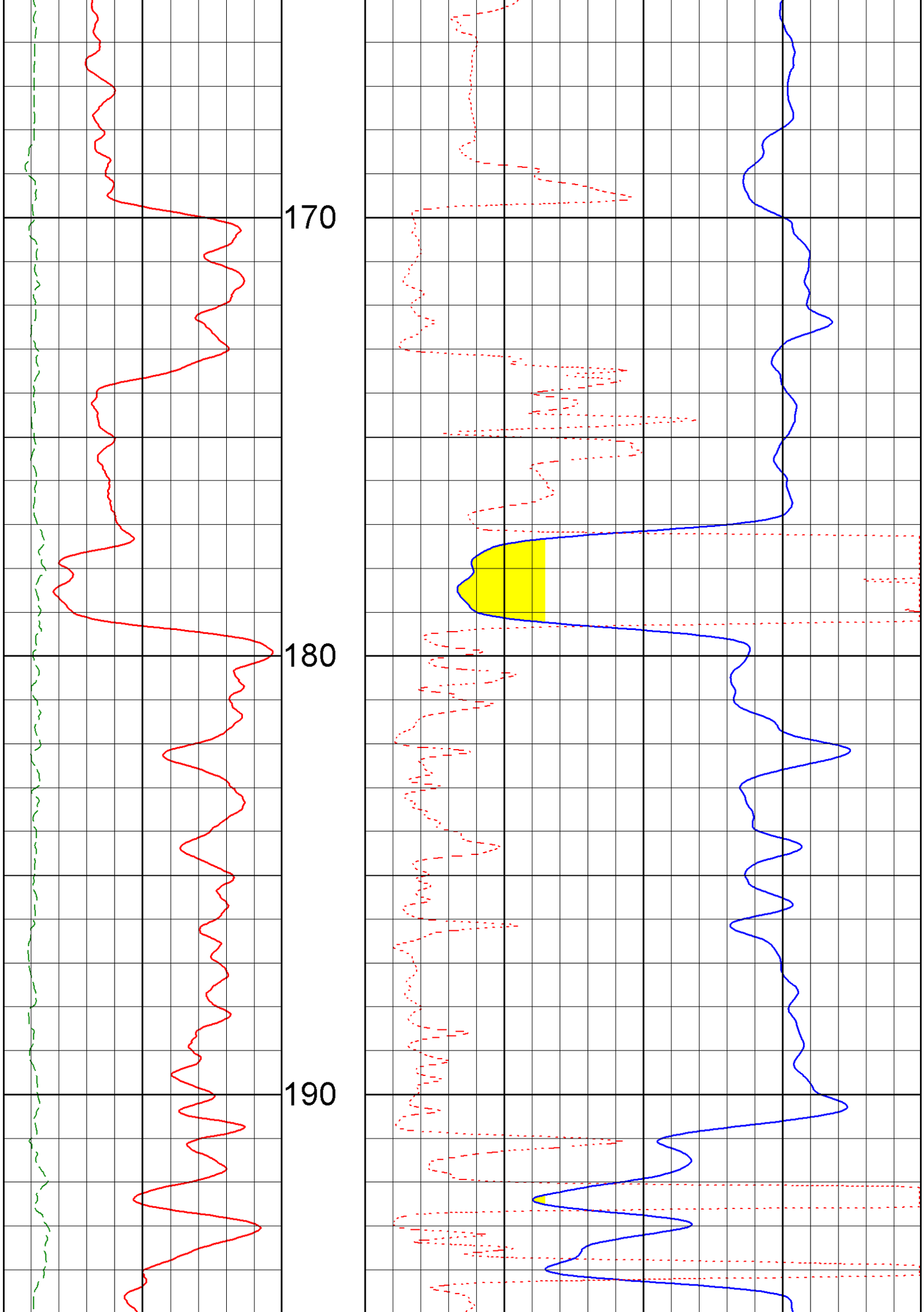
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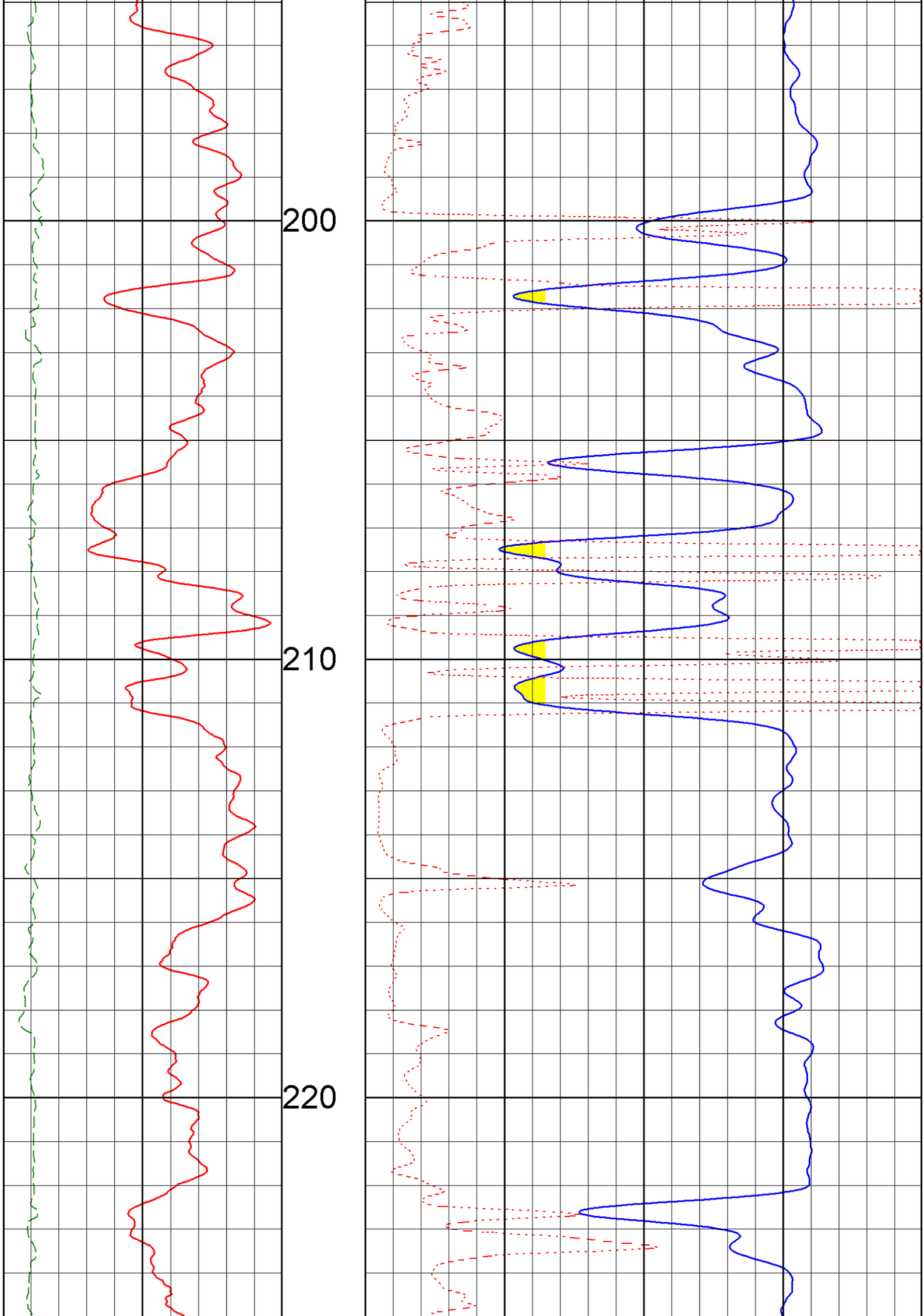
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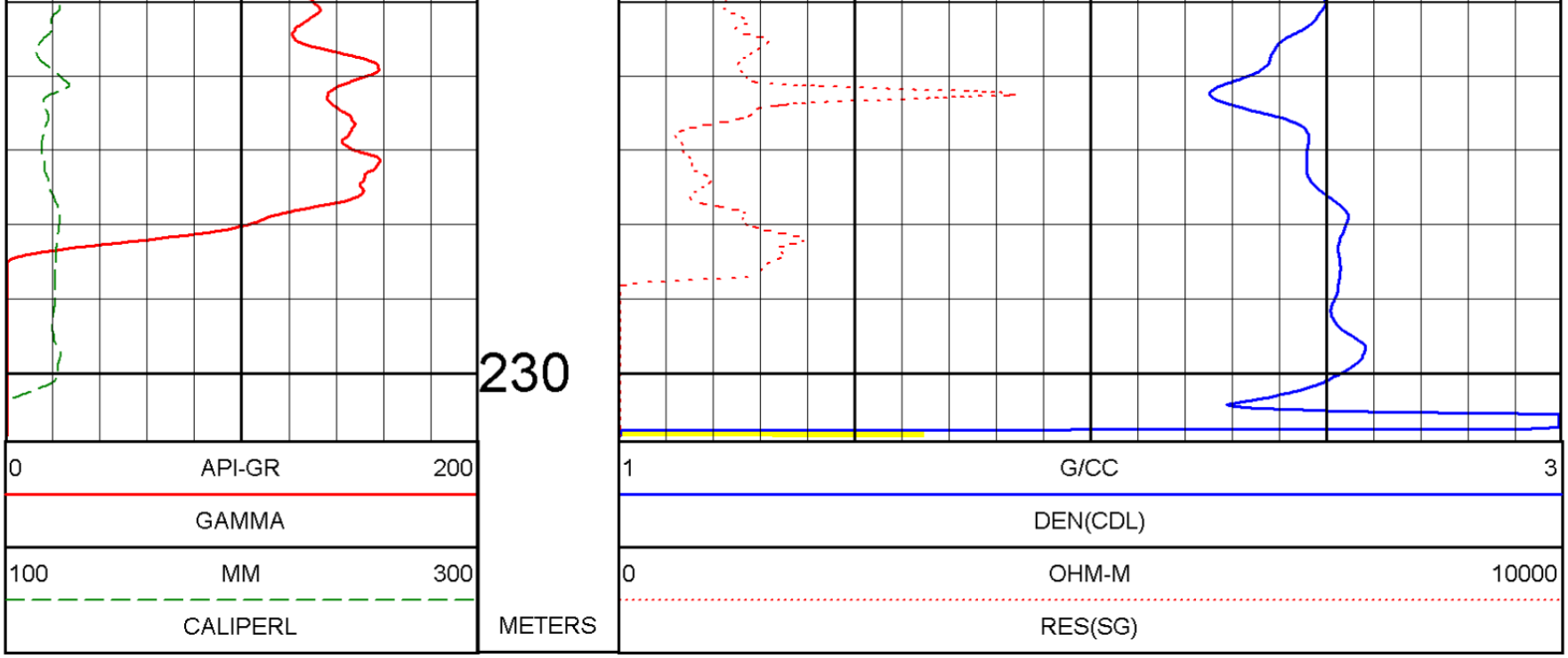


DENSITY 1:100 CM12-18 09/07/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177

MAGNETIC DECL : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65

PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012 VERSION = 3.64KF

TOOL CALIBRATION CM12-18 09/07/12 23:30
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

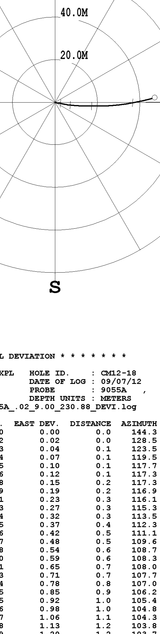
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-18
DATE OF LOG: 09/07/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 10 M/CM
TRUE DEPTH: 223.48 M
AZIMUTH: 87.4
DISTANCE: 46.9 M
+ = 50 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM12-18
FIELD OFFICE : CENTURY GEO DATE OF LOG : 09/07/12
DATA FROM : N/A PROBE : 9055A 59
MAG. DECL. : 15.300 DEPTH UNITS : METERS
LOG: CM12-18_09-07-12_22-37_9055A_.02_9.00_230.88_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
9.02	9.02	-0.00	0.00	0.0	144.2	1.4	144.3
10.00	10.00	-0.02	0.02	0.0	128.5	1.8	124.3
11.00	11.00	-0.03	0.04	0.1	123.5	1.5	128.5
12.00	12.00	-0.04	0.07	0.1	119.5	1.6	121.6
13.00	13.00	-0.05	0.10	0.1	117.7	2.2	127.9
14.00	14.00	-0.06	0.12	0.1	117.3	1.7	111.0
15.00	15.00	-0.08	0.15	0.2	117.3	1.9	122.6
16.00	16.00	-0.09	0.19	0.2	116.9	2.5	107.6
17.00	17.00	-0.11	0.23	0.3	116.1	2.6	112.6
18.00	17.99	-0.13	0.27	0.3	115.3	2.5	110.3
19.00	18.99	-0.14	0.32	0.3	113.5	3.0	97.6
20.00	19.99	-0.15	0.37	0.4	112.3	3.2	100.4
21.00	20.99	-0.16	0.42	0.5	111.1	3.0	115.0
22.00	21.99	-0.17	0.48	0.5	109.6	3.6	101.5
23.00	22.99	-0.18	0.54	0.6	108.7	3.2	107.3
24.00	23.99	-0.20	0.59	0.6	108.3	3.6	110.2
25.00	24.98	-0.21	0.65	0.7	108.0	3.4	98.5
26.00	25.98	-0.23	0.71	0.7	107.7	3.7	102.0
27.00	26.98	-0.24	0.78	0.8	107.0	3.7	106.1
28.00	27.98	-0.25	0.85	0.9	106.2	3.9	102.1
29.00	28.97	-0.25	0.92	1.0	104.4	3.8	91.1
30.00	29.97	-0.26	0.98	1.0	104.8	4.1	94.1
31.00	30.97	-0.27	1.06	1.1	104.3	4.4	97.9
32.00	31.97	-0.28	1.13	1.2	103.8	4.4	99.9
33.00	32.96	-0.29	1.20	1.2	103.7	4.3	104.5
34.00	33.96	-0.31	1.27	1.3	103.6	4.9	104.2
35.00	34.96	-0.32	1.35	1.4	103.5	4.5	100.3
36.00	35.95	-0.34	1.43	1.5	103.3	4.9	101.5
37.00	36.95	-0.35	1.50	1.5	103.0	4.4	96.0
38.00	37.95	-0.36	1.58	1.6	102.7	4.5	98.6
39.00	38.95	-0.36	1.67	1.7	102.3	5.2	92.5
40.00	39.94	-0.37	1.75	1.8	102.0	4.9	91.1
41.00	40.94	-0.38	1.83	1.9	101.7	4.6	96.9
42.00	41.94	-0.39	1.91	1.9	101.7	4.7	91.9
43.00	42.93	-0.40	1.99	2.0	101.4	3.9	99.0
44.00	43.93	-0.42	2.07	2.1	101.5	4.8	96.2
45.00	44.92	-0.44	2.15	2.2	101.6	5.0	112.6
46.00	45.92	-0.46	2.23	2.3	101.7	4.8	104.5
47.00	46.92	-0.48	2.31	2.4	101.6	4.7	103.5
48.00	47.91	-0.49	2.39	2.4	101.6	4.7	97.5
49.00	48.91	-0.51	2.47	2.5	101.6	4.6	104.5
50.00	49.91	-0.52	2.55	2.6	101.6	4.8	106.7
51.00	50.90	-0.54	2.63	2.7	101.6	4.4	100.8
52.00	51.90	-0.56	2.70	2.8	101.7	4.5	113.0
53.00	52.90	-0.58	2.78	2.8	101.7	4.5	97.8
54.00	53.90	-0.59	2.85	2.9	101.7	4.6	94.7
55.00	54.89	-0.61	2.93	3.0	101.7	4.5	100.1
56.00	55.89	-0.63	3.01	3.1	101.7	4.6	100.2
57.00	56.89	-0.64	3.09	3.2	101.8	4.6	103.9
58.00	57.88	-0.66	3.16	3.2	101.8	4.3	99.1
59.00	58.88	-0.68	3.24	3.3	101.8	4.7	96.6
60.00	59.88	-0.69	3.32	3.4	101.8	4.6	90.7
61.00	60.87	-0.71	3.40	3.5	101.8	4.7	98.8
62.00	61.87	-0.72	3.48	3.6	101.8	4.6	103.4
63.00	62.87	-0.74	3.56	3.6	101.8	4.6	96.1
64.00	63.86	-0.75	3.64	3.7	101.8	4.7	96.5
65.00	64.86	-0.77	3.72	3.8	101.7	4.8	106.7
66.00	65.86	-0.79	3.80	3.9	101.8	4.8	105.6
67.00	66.85	-0.81	3.88	4.0	101.8	4.4	93.4
68.00	67.85	-0.82	3.95	4.0	101.7	4.5	91.1
69.00	68.85	-0.83	4.04	4.1	101.6	4.8	98.4
70.00	69.84	-0.84	4.12	4.2	101.6	4.9	99.6
71.00	70.84	-0.86	4.20	4.3	101.5	4.5	104.8
72.00	71.84	-0.88	4.28	4.4	101.6	4.9	101.7
73.00	72.83	-0.89	4.36	4.5	101.5	4.7	102.2
74.00	73.83	-0.91	4.44	4.5	101.6	4.7	104.3
75.00	74.83	-0.93	4.53	4.6	101.6	4.5	100.2
76.00	75.82	-0.94	4.61	4.7	101.6	4.8	102.2
77.00	76.82	-0.96	4.70	4.8	101.5	5.1	90.0
78.00	77.81	-0.97	4.79	4.9	101.5	5.2	95.5
79.00	78.81	-0.99	4.88	5.0	101.5	5.2	97.5
80.00	79.80	-1.00	4.97	5.1	101.4	5.2	98.1
81.00	80.80	-1.02	5.05	5.2	101.4	4.7	97.4
82.00	81.80	-1.03	5.14	5.2	101.3	5.3	90.9
83.00	82.79	-1.04	5.23	5.3	101.2	5.2	98.7
84.00	83.79	-1.05	5.32	5.4	101.2	5.2	98.8
85.00	84.78	-1.07	5.41	5.5	101.2	5.7	105.0
86.00	85.78	-1.09	5.50	5.6	101.2	5.0	109.9
87.00	86.78	-1.12	5.59	5.7	101.3	5.3	110.2
88.00	87.77	-1.14	5.68	5.8	101.3	5.7	111.1
89.00	88.77	-1.17	5.78	5.9	101.4	5.6	110.0
90.00	89.76	-1.19	5.88	6.0	101.5	5.9	103.0
91.00	90.76	-1.21	5.98	6.1	101.4	6.7	110.5
92.00	91.75	-1.23	6.09	6.2	101.4	6.6	101.7
93.00	92.74	-1.25	6.20	6.3	101.4	6.4	92.8
94.00	93.74	-1.26	6.31	6.4	101.4	6.4	95.3
95.00	94.73	-1.27	6.42	6.5	101.2	6.6	99.6
96.00	95.72	-1.28	6.53	6.7	101.1	6.2	111.7
97.00	96.72	-1.30	6.65	6.8	101.0	7.5	97.8
98.00	97.71	-1.30	6.78	6.9	100.9	6.7	95.4
99.00	98.70	-1.32	6.91	7.0	100.8	8.0	93.0
100.00	99.69	-1.32	7.05	7.2	100.6	8.2	88.2
101.00	100.68	-1.32	7.19	7.3	100.4	8.1	94.2
102.00	101.67	-1.33	7.33	7.5	100.3	8.1	92.4
103.00	102.66	-1.34	7.47	7.6	100.2	8.3	89.8
104.00	103.65	-1.36	7.62	7.7	100.1	7.9	106.0
105.00	104.64	-1.37	7.76	7.9	100.0	8.4	94.3
106.00	105.63	-1.38	7.91	8.0	99.9	8.6	92.2
107.00	106.62	-1.39	8.05	8.2	99.8	8.3	96.8
108.00	107.61	-1.40	8.20	8.3	99.7	8.4	94.5
109.00	108.60	-1.41	8.34	8.5	99.6	8.4	94.3
110.00	109.58	-1.43	8.48	8.6	99.6	8.6	90.7
111.00	110.57	-1.45	8.62	8.7	99.6	8.5	95.2
112.00	111.56	-1.46	8.77	8.9	99.5	8.5	92.7
113.00	112.55	-1.47	8.92	9.0	99.4	8.5	101.4
114.00	113.54	-1.49	9.07	9.2	99.3	8.7	91.8
115.00	114.53	-1.50	9.22	9.3	99.2	8.8	85.2
116.00	115.52	-1.51	9.37	9.5	99.2	8.9	96.3
117.00	116.51	-1.53	9.52	9.6	99.1	9.0	88.8
118.00	117.49	-1.54	9.68	9.8	99.1	9.1	95.7
119.00	118.48	-1.55	9.84	10.0	99.0	9.2	97.7
120.00	119.47	-1.56	10.00	10.1	98.9	9.3	97.1
121.00	120.45	-1.55	10.17	10.3	98.7	9.2	97.5
122.00	121.44	-1.56	10.34	10.5	98.6	10.0	92.9
123.00	122.42	-1.58	10.51	10.6	98.5	10.3	95.9
124.00	123.41	-1.59	10.69	10.8	98.5	10.3	93.2
125.00	124.39	-1.61	10.87	11.0	98.4	11.3	86.4
126.00	125.37	-1.63	11.05	11.2	98.4	12.3	87.6
127.00	126.35	-1.65	11.24	11.4	98.4	11.3	95.4
128.00	127.33	-1.65	11.43	11.6	98.2	11.6	90.5
129.00	128.31	-1.64	11.64	11.8	98.0	12.2	80.0
130.00	129.29	-1.65	11.85	12.0	97.9	12.2	85.7
131.00	130.27	-1.66	12.06	12.2	97.8	12.4	87.9
132.00	131.24	-1.66	12.27	12.4	97.7	12.5	94.0
133.00	132.22	-1.67	12.49	12.6	97.6	12.5	93.2
134.00	133.20	-1.67	12.71	12.8	97.5	12.8	91.7
135.00	134.17	-1.68	12.93	13.0	97.4	13.3	99.2
136.00	135.14	-1.68	13.16	13.3	97.3	13.1	87.6
137.00	136.12	-1.68	13.39	13.5	97.2	13.3	87.7
138.00	137.09	-1.68	13.62	13.7	97.0	14.1	87.7
139.00	138.06	-1.69	13.85	14.0	97.0	14.2	85.8
140.00	139.03	-1.70	14.10	14.2	96.9	14.0	88.3
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144.00	142.90	-1.71	15.10	15.2	96.5	15.0	96.7
145.00	143.87	-1.73	15.34	15.4	96.4	16.1	86.4
146.00	144.83	-1.74	15.61	15.7	96.4	15.5	90.2
147.00	145.80	-1.74	15.88	16.0	96.2	16.1	89.5
148.00	146.76	-1.73	16.16	16.3	96.1	16.6	91.8
149.00	147.71	-1.74	16.45	16.5	96.0	17.1	90.0
150.00	148.67	-1.74	16.75	16.8	95.9	17.2	89.4
151.00	149.62	-1.74	17.04	17.1	95.8	17.3	94.2
152.00	150.58	-1.73	17.34	17.4	95.7	17.3	90.8
153.00	151.53	-1.74	17.64	17.7	95.6	17.4	92.4
154.00	152.49	-1.73	17.94	18.0	95.5	17.6	89.6
155.00	153.44	-1.73	18.24	18.3	95.4	17.7	89.3
156.00	154.39	-1.72	18.54	18.6	95.3	18.0	83.7
157.00	155.34	-1.71	18.85	18.9	95.2	18.0	87.5
158.00	156.30	-1.72	19.15	19.2	95.1	18.1	96.1
159.00	157.24	-1.71	19.47	19.5	95.0	18.6	88.7
160.00	158.19	-1.70	19.79	19.9	94.9	19.7	86.5
161.00	159.13	-1.71	20.12	20.2	94.9	19.8	87.8
162.00	160.08	-1.70	20.46	20.5	94.8	19.3	87.1
163.00	161.02	-1.70	20.79	20.9	94.7	19.4	89.8
164.00	161.96	-1.69	21.12	21.2	94.6	19.3	90.2
165.00	162.91	-1.70	21.45	21.5	94.5	19.7	98.8
166.00	163.85	-1.72	21.76	21.8	94.5	19.5	89.9
167.00	164.80	-1.72	22.10	22.2	94.5	19.2	89.2
168.00	165.74	-1.72	22.43	22.5	94.4	19.3	82.1
169.00	166.69	-1.72	22.75	22.8	94.3	18.1	92.4
170.00	167.63	-1.71	23.08	23.1	94.2	19.5	87.1
171.00	168.57	-1.71	23.42	23.5	94.2	20.2	99.5
172.00	169.51	-1.71	23.76	23.8	94.1	20.9	94.1
173.00	170.45	-1.69	24.11	24.2	94.0	20.5	88.6
174.00	171.38	-1.66	24.46	24.5	93.9	21.0	89.4
175.00	172.32	-1.65	24.82	24.9	93.8	20.6	87.6
176.00	173.25	-1.63	25.18	25.2	93.7	20.9	91.2
177.00	174.18	-1.60	25.54	25.6	93.6	20.7	93.3
178.00	175.11	-1.58	25.90	25.9	93.5	21.3	87.2
179.00	176.04	-1.56	26.26	26.3	93.4	21.5	92.1
180.00	176.96	-1.51	26.62	26.7	93.3	22.0	93.3
181.00	177.90	-1.49	26.99	27.0	93.2	22.2	84.7
182.00	178.83	-1.46	27.36	27.4	93.1	22.2	91.3
183.00	179.76	-1.43	27.74	27.8	93.0	22.4	88.9
184.00	180.68	-1.40	28.12	28.2	92.9	22.1	86.0
185.00	181.61	-1.37	28.50	28.5	92.8	22.4	85.6
186.00	182.53	-1.33	28.88	28.9	92.6	22.4	85.6
187.00	183.45	-1.29	29.26	29.3	92.5	21.8	83.8
188.00	184.38	-1.27	29.64	29.7	92.5	22.7	84.0
189.00	185.30	-1.23	30.02	30.0	92.3	23.5	82.9
190.00	186.22	-1.17	30.41	30.4	92.2	23.3	81.4
191.00	187.14	-1.12	30.80	30.8	92.1	22.7	88.3
192.00	188.06	-1.08	31.19	31.2	92.0	23.4	82.2
193.00	188.97	-1.02	31.58	31.6	91.9	23.4	84.0
194.00	189.89	-0.98	31.98	32.0	91.8	23.6	80.9
195.00	190.81	-0.92	32.37	32.4	91.6	23.5	81.8
196.00	191.73	-0.87	32.77	32.8	91.5	23.6	81.4
197.00	192.64	-0.81	33.16	33.2	91.4	22.0	90.8
198.00	193.56	-0.75	33.56	33.6	91.3	23.6	79.3
199.00	194.47	-0.67	33.96	34.0	91.1	24.0	81.4
200.00	195.38	-0.61	34.36	34.4	91.0	24.1	83.5
201.00	196.29	-0.53	34.77	34.8	90.9	24.8	78.7
202.00	197.20	-0.45	35.17	35.2	90.7	24.4	79.1
203.00	198.12	-0.38	35.57	35.6	90.6	24.3	80.8
204.00	199.03	-0.31	35.98	36.0	90.5	24.7	77.6
205.00	199.94	-0.23	36.39	36.4	90.4	24.3	78.3
206.00	200.85	-0.16	36.80	36.8	90.2	24.5	77.2
207.00	201.76	-0.08	37.21	37.2	90.1	24.5	82.2
208.00	202.67	-0.00	37.61	37.6	90.0	24.7	79.5
209.00	203.58	0.08	38.01	38.0	89.9	27.8	68.0
210.00	204.49	0.17	38.42	38.4	89.8	23.9	79.5
211.00	205.40	0.25	38.82	38.8	89.6	24.7	77.0
212.00	206.31	0.33	39.22	39.2	89.5	24.4	78.3
213.00	207.22	0.42	39.63	39.6	89.4	24.5	79.4
214.00	208.13	0.50	40.04	40.0	89.3	24.8	77.8
215.00	209.04	0.58	40.45	40.5	89.2	24.5	80.0
216.00	209.95	0.65	40.85	40.9	89.1	24.5	75.6
217.00	210.86	0.73	41.25	41.3	89.0	24.7	71.6
218.00	211.77	0.83	41.66	41.7	88.9	25.3	74.7
219.00	212.68	0.92	42.06	42.1	88.7	24.5	76.5
220.00	213.59	1.02	42.47	42.5	88.6	24.7	77.2
221.00	214.50	1.12	42.87	42.9	88.5	24.5	75.7
222.00	215.41	1.20	43.26	43.3	88.4	23.5	78.8
223.00	216.33	1.30	43.65	43.7	88.3	24.8	75.3
224.00	217.24	1.41	44.04	44.1	88.2	24.3	77.1
225.00	218.15	1.50	44.44	44.5	88.1	24.4	77.1
226.00	219.06	1.61	44.84	44.9	87.9	23.8	79.5
227.00	219.97	1.72	45.25	45.3	87.8	24.1	76.0
228.00	220.87	1.82	45.66	45.7	87.7	25.3	75.0
229.00	221.78	1.94	46.07	46.1	87.6	24.4	81.8
230.00	222.68	2.06	46.47	46.5	87.5	25.7	72.1
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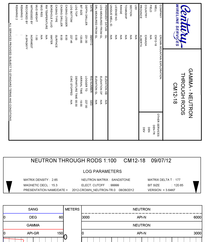
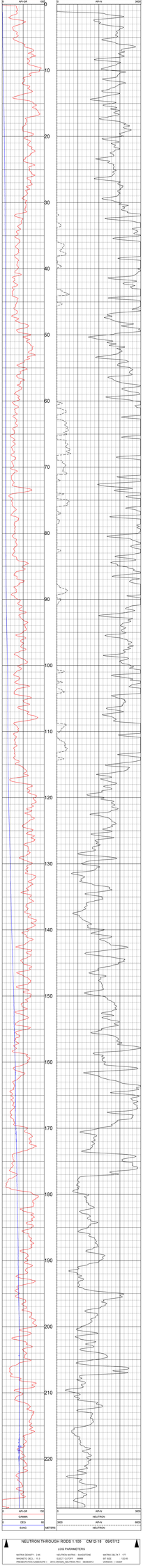


NEUTRON THROUGH RODS 1:100 CM12-18 09/07/12

LOG PARAMETERS

MATRIX DENSITY 2.65	NEUTRON MATRIX SANDSTONE	MATRIX DELTA T 157	
MAGNETIC DECL 16.3	ELECT. CUTOFF 6MMM	INT SIZE 120.00	
PRESENTATION NAMES/DATE 2012 DESIGN_NEUTRON 76.0	09/28/2012	VERSION 4.1MAP	



NEUTRON THROUGH RODS 1:100 CM12-18 09/07/12

LOG PARAMETERS

MATRIX DENSITY 2.65 NEUTRON MATRIX SANDSTONE MATRIX DELTA T 157
MAGNETIC DECL 16.3 ELECT. CUTOFF 6MMM INT SIZE 120.00
PRESENTATION NAMES/DATE 2012 DESIGN_NEUTRON 76.0 09/28/2012 VERSION 4.1MAP

TOOL CALIBRATION: CM12-18 09/07/12 19:18
TOOL NUMBER: CM12-18
SERIAL NUMBER: 58

	DATE	TIME	SENSOR:	STANDARD:	RESPONSE:	
			GAMMA	Default	[CPS]	Default [CPS]
1	Aug02,12	04:09:25	NEUTRON	1,000	[API-N]	1,000 [API-N]
2	Jul13,12	08:49:56	FORCE/PT	Default	[CPS]	[CPS]
3	Jul13,12	08:49:56	TEMP	Default	[CPS]	9078.000 [CPS]
4	May12,00	08:20:59	RES	100.000	[OHM]	7978.000 [CPS]
5	May12,00	08:20:59	CCL	0.000	[VOLTS]	[CPS]
6	Nov12,00	05:20:59	SP	80.000	[MV]	3462.000 [CPS]
7	Dec04,00	10:45:49	NEUTRON	0.000	[API-N]	0.000 [CPS]
8	Oct19,01	08:49:56	FORCE/PT	Default	[CPS]	[CPS]
9	Oct19,01	08:50:56	TEMP	Default	[CPS]	Default [CPS]
			TEMP	Default	[CPS]	Default [CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-19

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-19
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

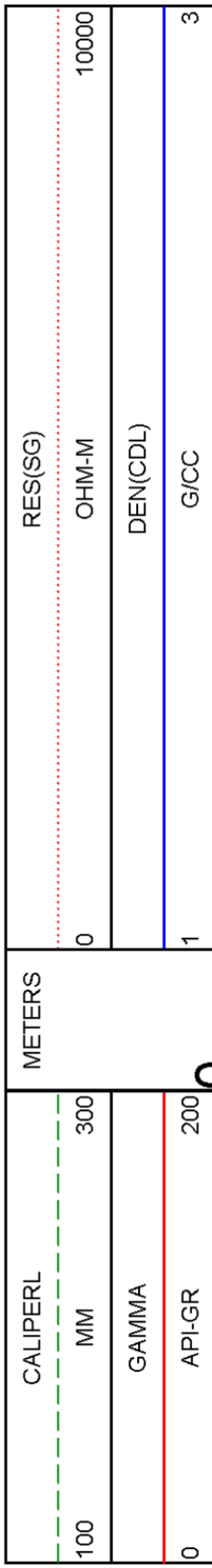
DATE	:10/07/12	RIG NUMBER	:GED
DEPTH DRILLER	:182.50	LOGGER TD	:182.50
BIT SIZE	:120.65	ARRIVAL TIME	:03:00
LOG TOP	:0.00	DEPARTURE TIME	:08:30
LOG BOTTOM	:182.30	CIRC STOPPED	:N/A
CASING LOGGER	:6.40		
CASING DRILLER	:6.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

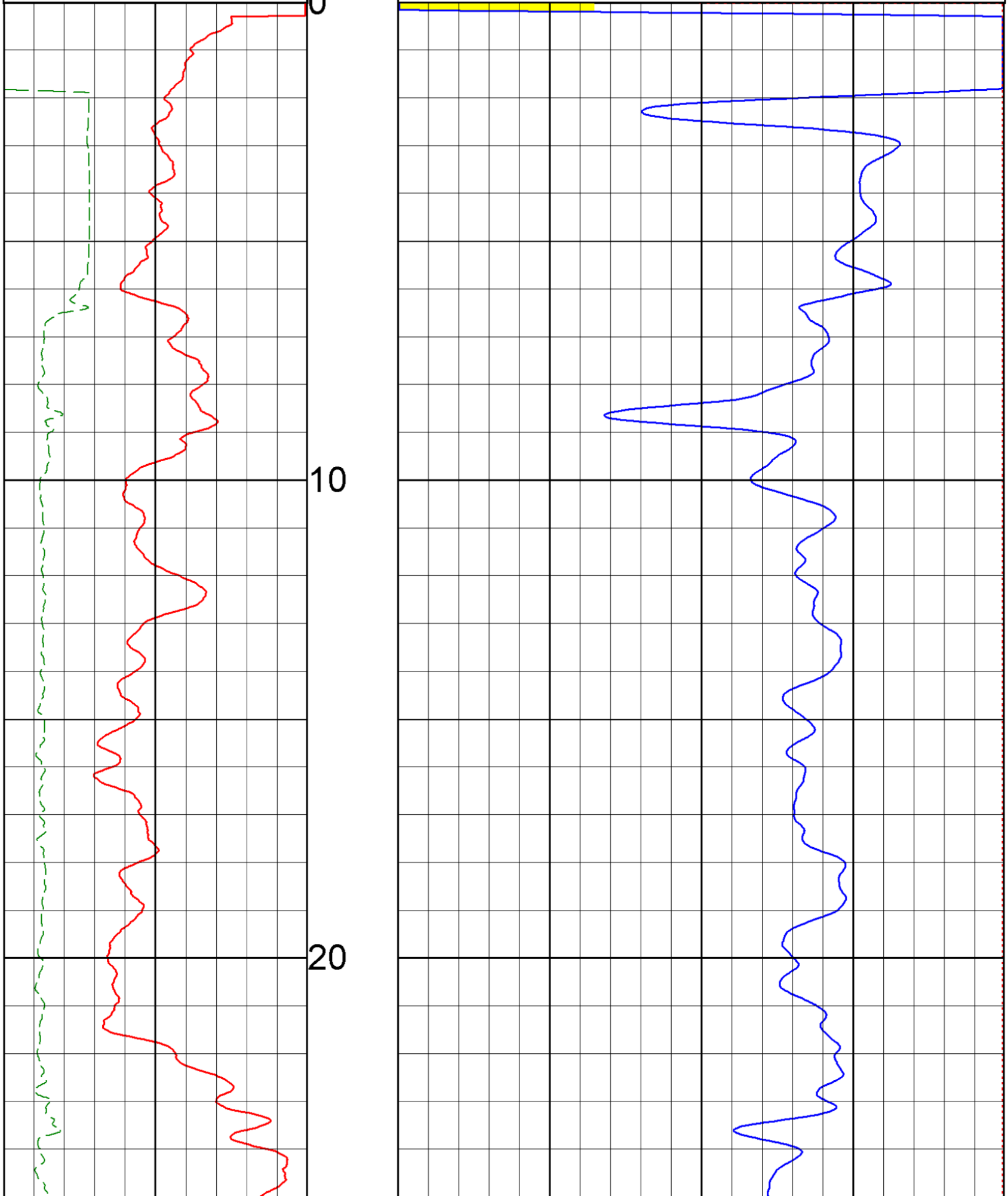
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DENSITY 1:100 CM12-19 10/07/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177	
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65	
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF	

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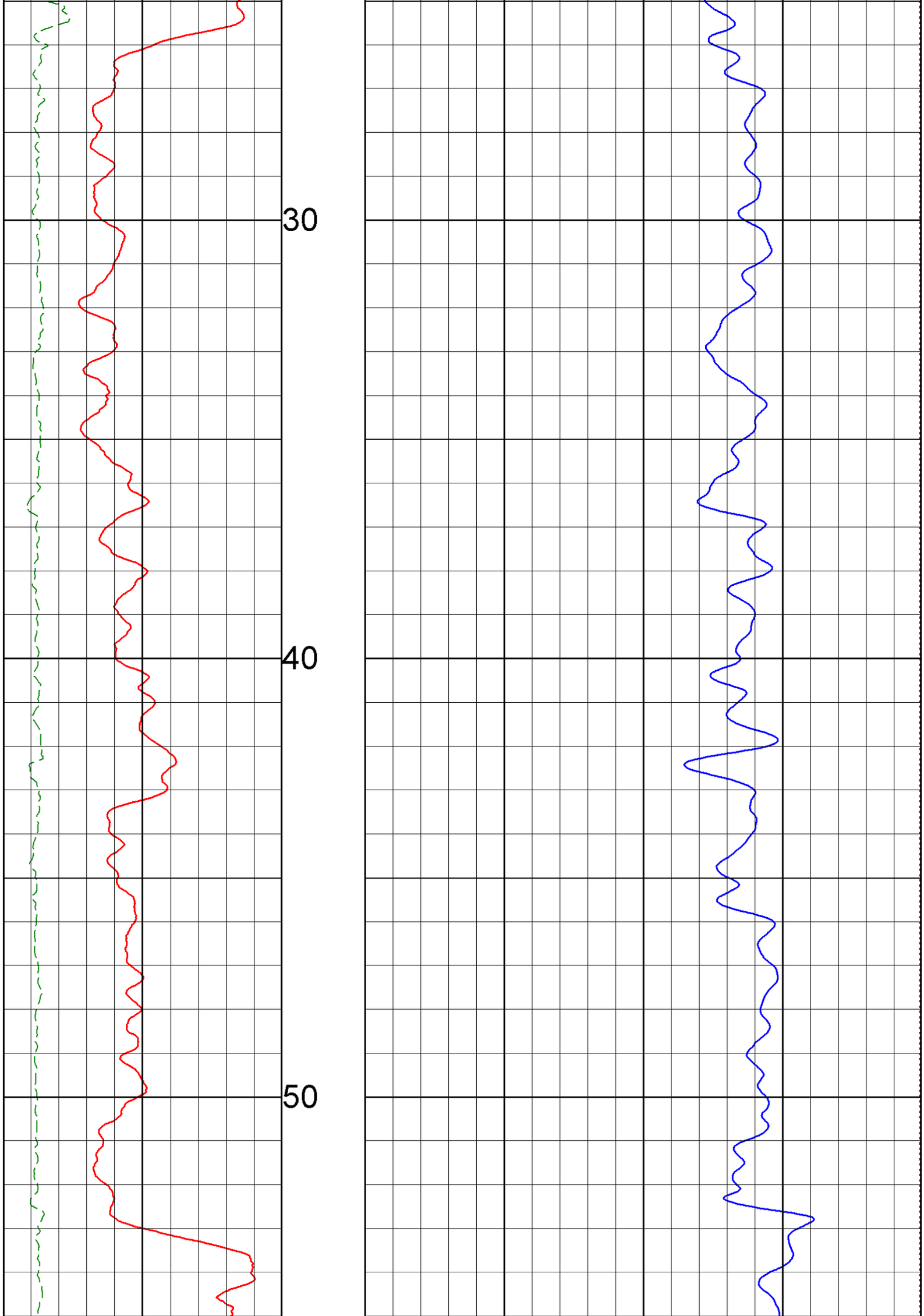
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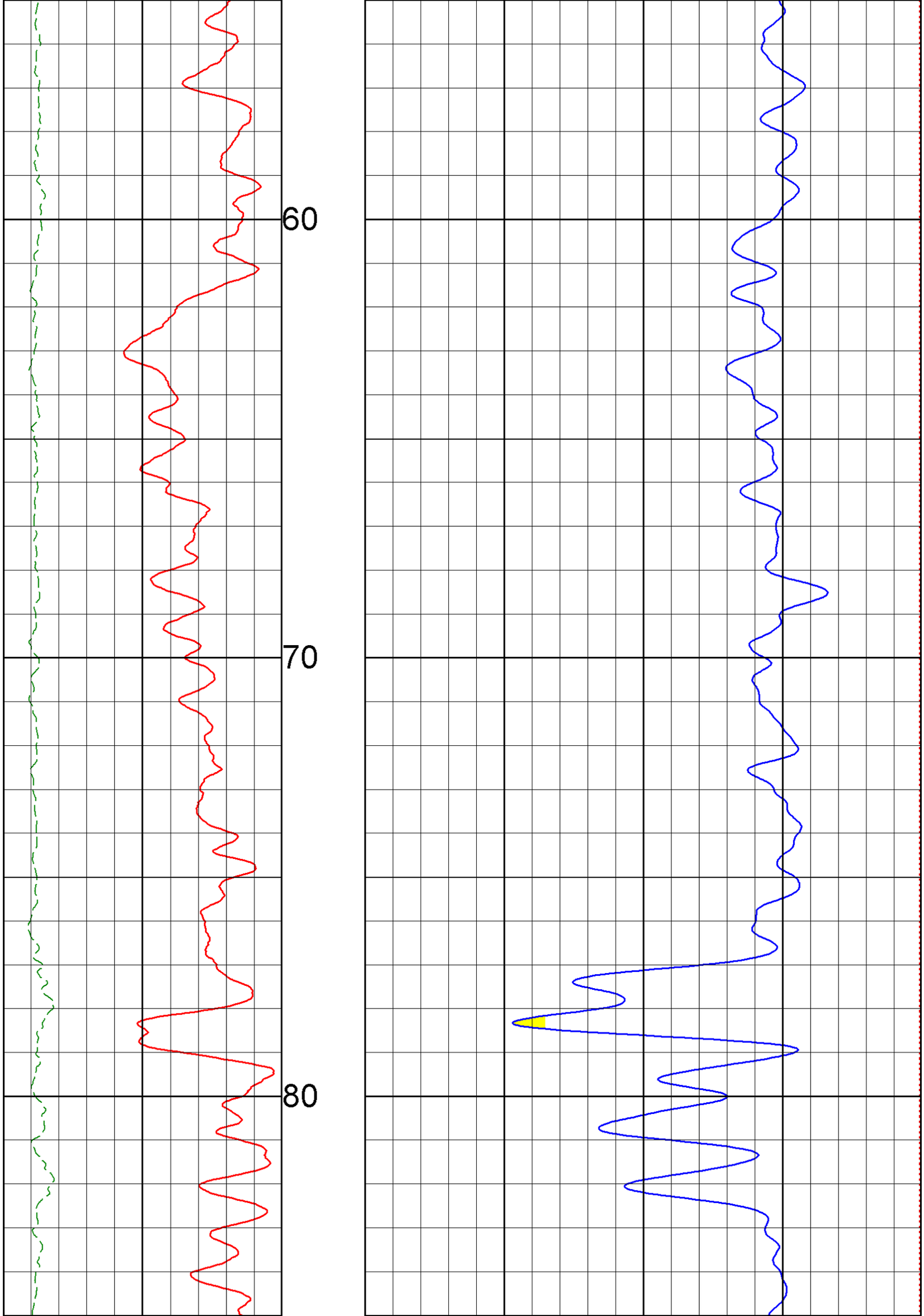
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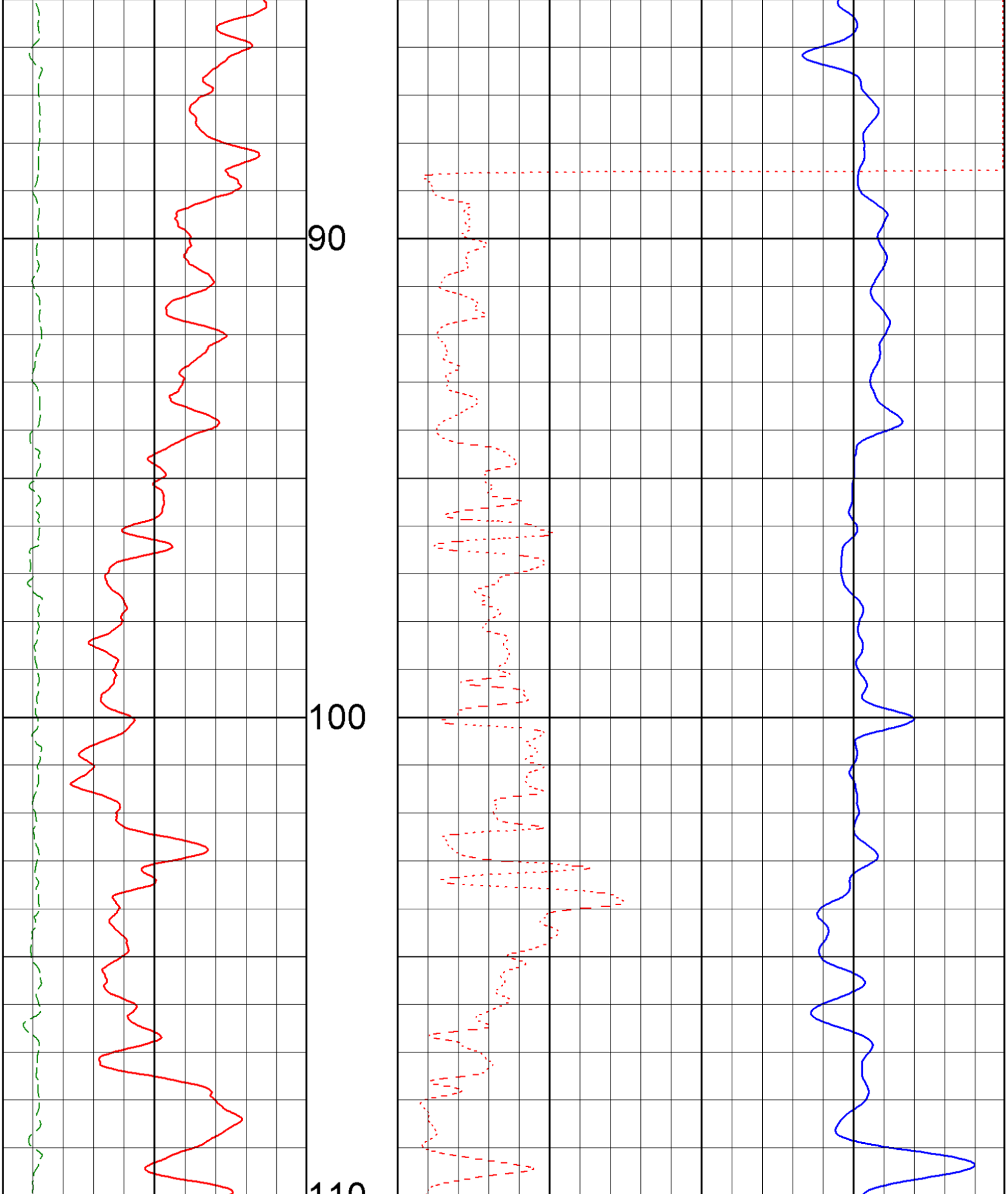
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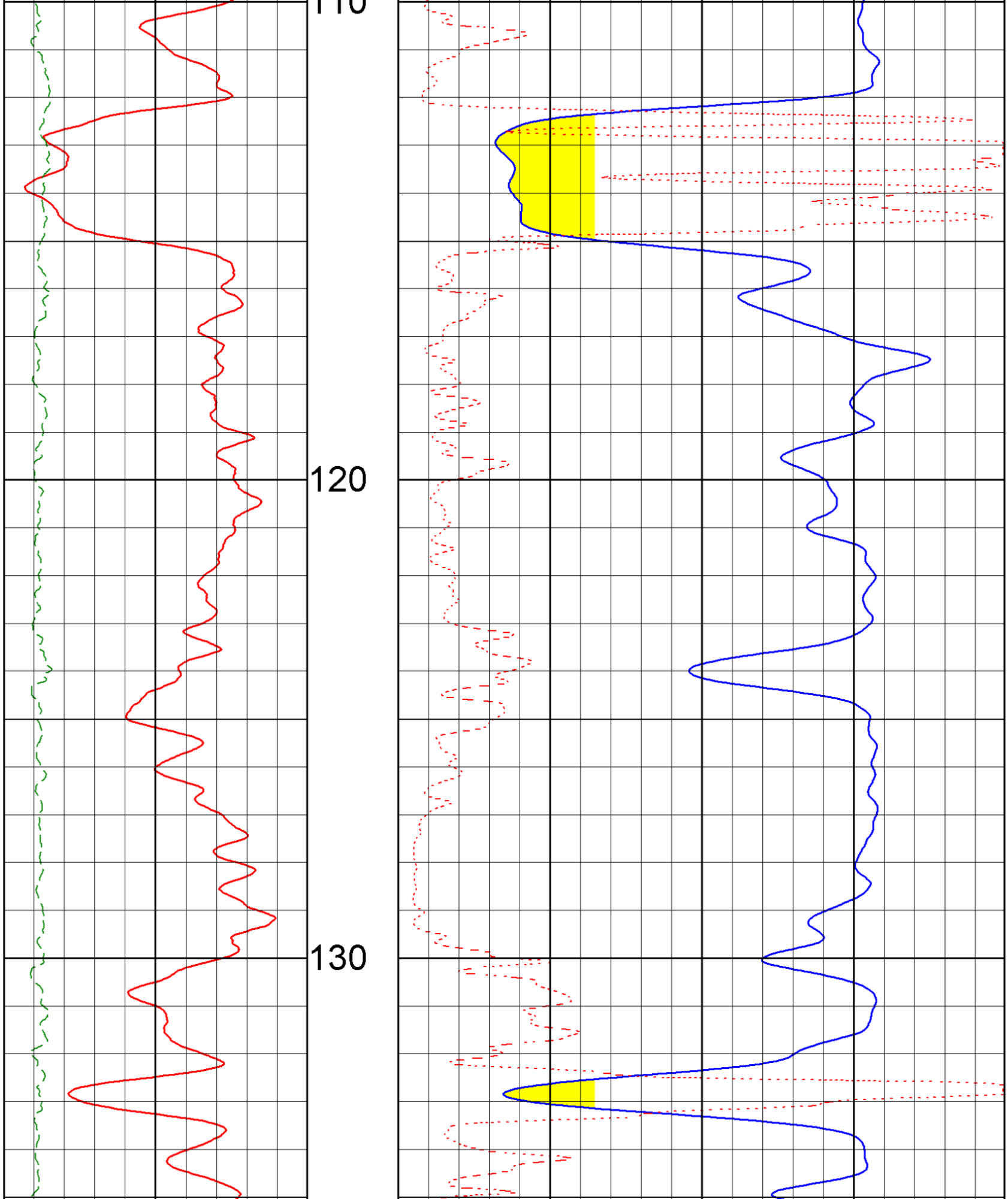
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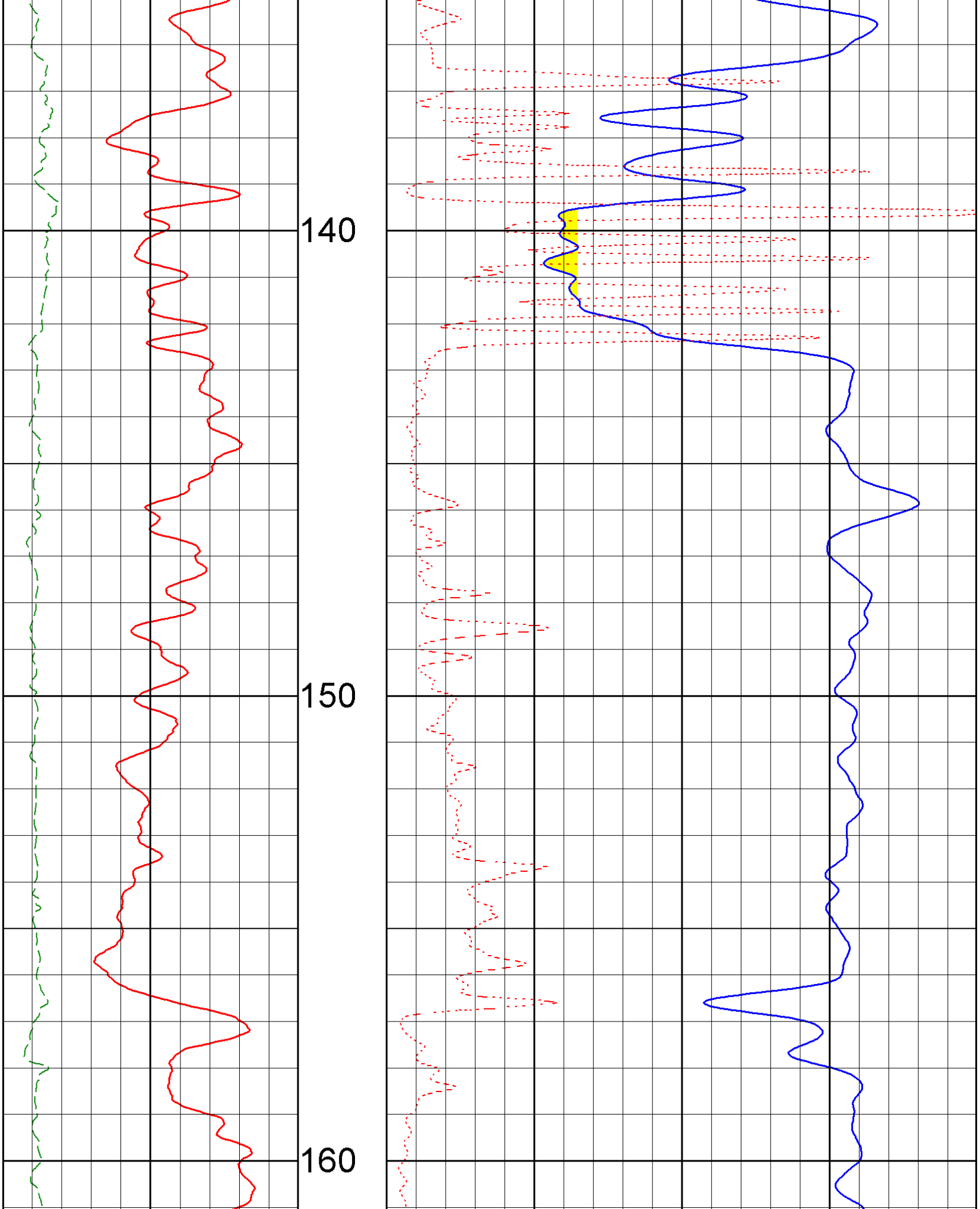
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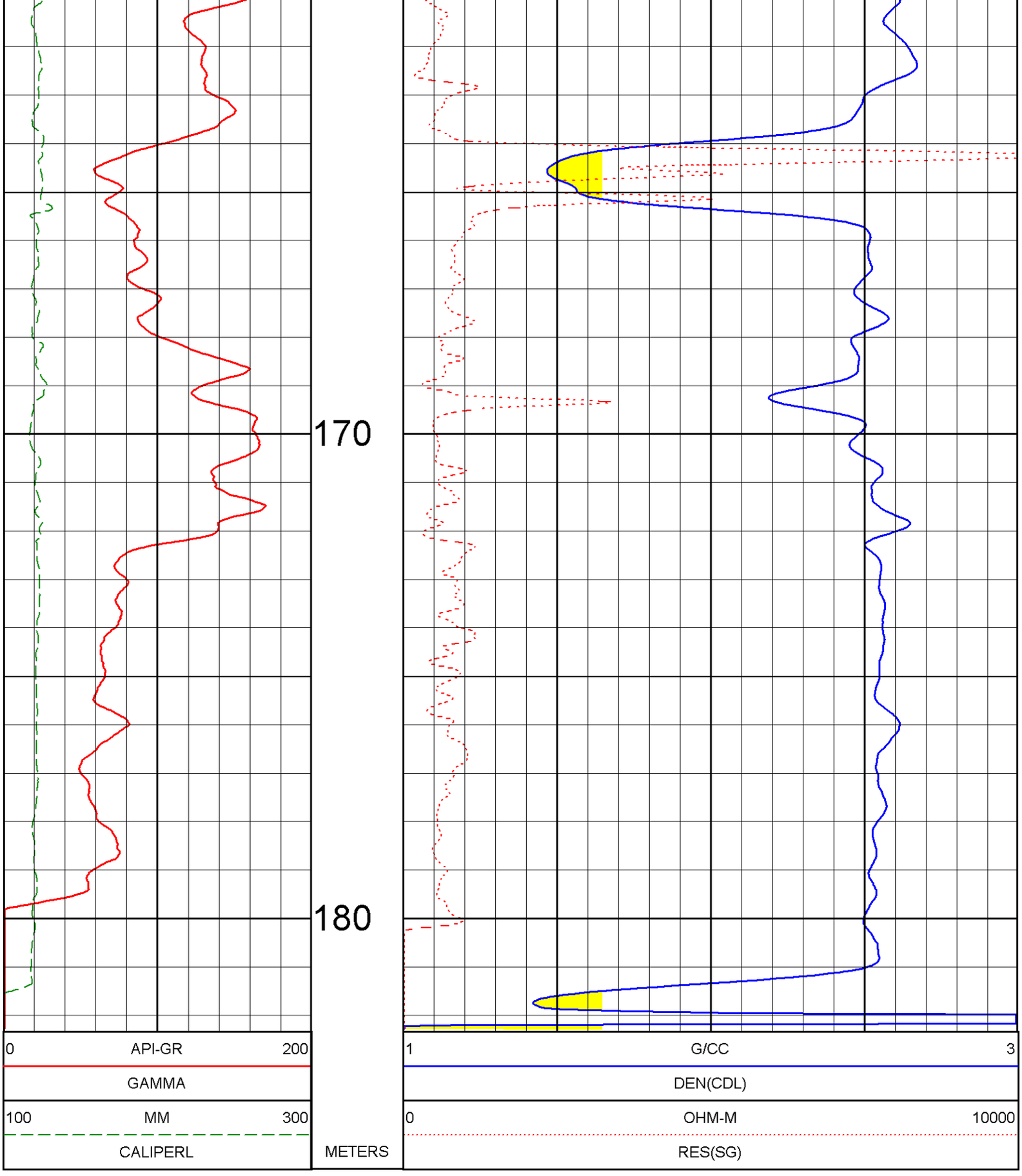


DENSITY 1:100 CM12-19 10/07/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM12-19 10/07/12 07:42
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

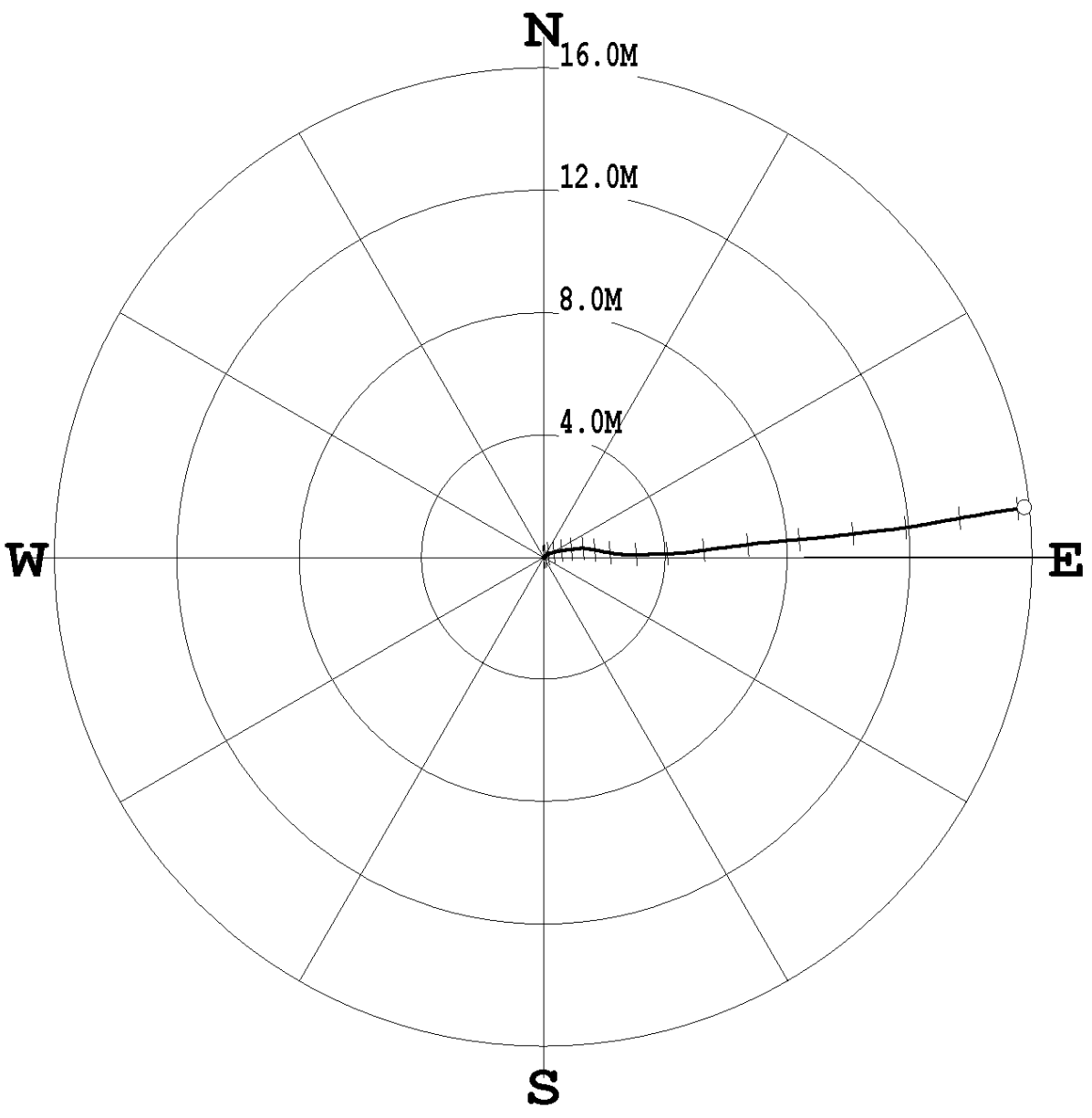
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Oct07,12	08:56:11	DEN(SS)	1.590	[G/CC]	52210.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-19
DATE OF LOG: 10/07/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 2 M/CM
TRUE DEPTH: 181.24 M
AZIMUTH: 84.1
DISTANCE: 15.8 M
+ = 10 M INCR
○ = BOTTOM OF HOLE

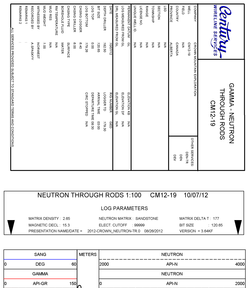


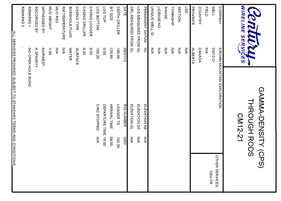
* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY GEO
DATA FROM : N/A
MAG. DECL. : 15.300
LOG: CM12-19_10-07-12_06-56_9055A_.02_9.00_182.36_DEVI.log

HOLE ID. : CM12-19
DATE OF LOG : 10/07/12
PROBE : 9055A , 59
DEPTH UNITS : METERS

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
9.02	9.02	-0.00	0.00	0.0	96.4	0.4	96.4
10.00	10.00	0.00	0.01	0.0	78.2	0.4	77.0
11.00	11.00	0.01	0.01	0.0	58.2	0.4	55.3
12.00	12.00	0.01	0.01	0.0	63.4	0.3	126.3
13.00	13.00	0.01	0.02	0.0	62.4	0.4	54.3
14.00	14.00	0.01	0.03	0.0	62.6	0.4	55.1
15.00	15.00	0.02	0.03	0.0	61.1	0.5	78.1
16.00	16.00	0.02	0.04	0.0	58.8	0.5	46.5
17.00	17.00	0.03	0.04	0.1	56.4	0.5	45.6
18.00	18.00	0.03	0.05	0.1	55.4	0.4	25.3
19.00	19.00	0.04	0.05	0.1	54.8	0.8	47.3
20.00	20.00	0.04	0.06	0.1	55.2	0.3	62.3
21.00	21.00	0.05	0.07	0.1	54.2	0.2	24.4
22.00	22.00	0.05	0.07	0.1	54.0	0.5	65.6
23.00	23.00	0.06	0.08	0.1	53.6	0.5	57.2
24.00	24.00	0.07	0.09	0.1	53.8	0.9	64.0
25.00	25.00	0.07	0.10	0.1	53.4	0.6	51.1
26.00	26.00	0.08	0.11	0.1	54.0	0.5	49.1
27.00	27.00	0.09	0.12	0.1	53.4	0.8	40.4
28.00	28.00	0.10	0.13	0.2	53.3	1.0	67.4
29.00	29.00	0.10	0.14	0.2	54.3	0.9	61.6
30.00	30.00	0.11	0.16	0.2	54.8	0.8	62.1
31.00	31.00	0.12	0.17	0.2	55.5	0.9	65.6
32.00	32.00	0.12	0.18	0.2	55.8	0.9	63.9
33.00	33.00	0.13	0.20	0.2	56.7	1.0	67.3
34.00	34.00	0.14	0.22	0.3	57.3	1.0	63.0
35.00	35.00	0.14	0.23	0.3	58.6	0.9	71.5
36.00	36.00	0.15	0.25	0.3	59.7	1.3	80.2
37.00	37.00	0.15	0.27	0.3	60.5	1.2	64.4
38.00	38.00	0.16	0.29	0.3	61.4	1.1	66.2
39.00	39.00	0.17	0.31	0.4	61.9	1.0	68.5
40.00	40.00	0.17	0.34	0.4	62.8	1.7	58.8
41.00	41.00	0.18	0.36	0.4	63.7	1.4	64.5
42.00	42.00	0.18	0.38	0.4	64.5	1.4	95.1
43.00	43.00	0.19	0.41	0.4	65.1	0.6	59.2
44.00	44.00	0.19	0.43	0.5	66.0	1.7	77.5
45.00	45.00	0.20	0.46	0.5	66.8	1.7	94.2
46.00	45.99	0.20	0.48	0.5	67.5	1.5	83.2
47.00	46.99	0.20	0.51	0.5	68.0	1.5	83.6
48.00	47.99	0.21	0.54	0.6	68.8	1.8	82.1
49.00	48.99	0.21	0.57	0.6	69.3	1.5	79.2
50.00	49.99	0.22	0.59	0.6	69.6	1.5	75.5
51.00	50.99	0.23	0.62	0.7	69.9	1.4	93.1
52.00	51.99	0.23	0.64	0.7	70.3	1.6	91.2
53.00	52.99	0.24	0.67	0.7	70.7	1.9	75.7
54.00	53.99	0.24	0.70	0.7	71.2	2.0	93.4
55.00	54.99	0.24	0.74	0.8	72.0	2.4	87.5
56.00	55.99	0.24	0.77	0.8	72.5	2.1	80.1
57.00	56.99	0.25	0.80	0.8	72.7	1.8	78.4
58.00	57.99	0.25	0.84	0.9	73.2	1.9	79.8
59.00	58.99	0.26	0.87	0.9	73.5	2.3	89.4
60.00	59.99	0.26	0.91	0.9	74.1	2.1	77.4
61.00	60.99	0.27	0.95	1.0	74.4	2.3	77.6
62.00	61.99	0.27	0.99	1.0	74.7	2.1	61.0
63.00	62.99	0.28	1.02	1.1	74.9	2.3	81.8
64.00	63.98	0.28	1.06	1.1	75.2	2.4	85.4
65.00	64.98	0.29	1.10	1.1	75.4	2.3	91.2
66.00	65.98	0.29	1.14	1.2	75.8	2.2	83.7
67.00	66.98	0.29	1.18	1.2	76.0	2.3	91.2
68.00	67.98	0.30	1.22	1.3	76.3	2.1	76.1
69.00	68.98	0.30	1.25	1.3	76.6	2.2	86.7
70.00	69.98	0.30	1.29	1.3	77.0	2.4	97.1
71.00	70.98	0.30	1.33	1.4	77.4	2.0	98.0
72.00	71.98	0.29	1.37	1.4	78.0	2.2	98.3
73.00	72.98	0.28	1.40	1.4	78.5	2.1	95.5
74.00	73.98	0.28	1.44	1.5	78.9	2.0	96.5
75.00	74.98	0.28	1.47	1.5	79.4	2.1	99.2
76.00	75.98	0.27	1.51	1.5	79.9	2.3	92.0
77.00	76.98	0.26	1.55	1.6	80.4	2.4	98.0
78.00	77.97	0.26	1.59	1.6	80.8	2.3	92.2
79.00	78.97	0.25	1.63	1.7	81.2	2.4	92.1
80.00	79.97	0.24	1.67	1.7	81.7	2.2	103.3
81.00	80.97	0.24	1.71	1.7	82.1	2.5	111.7
82.00	81.97	0.23	1.75	1.8	82.6	2.5	100.6
83.00	82.97	0.22	1.79	1.8	83.1	2.8	103.4
84.00	83.97	0.21	1.84	1.9	83.6	2.7	99.4
85.00	84.97	0.20	1.89	1.9	84.0	2.7	102.5
86.00	85.97	0.19	1.94	1.9	84.5	3.0	100.1
87.00	86.97	0.17	1.99	2.0	85.0	3.4	98.6
88.00	87.96	0.17	2.05	2.1	85.4	3.5	102.1
89.00	88.96	0.16	2.11	2.1	85.8	3.1	98.6
90.00	89.96	0.15	2.17	2.2	86.0	3.7	112.4
91.00	90.96	0.14	2.23	2.2	86.4	4.3	105.6
92.00	91.95	0.12	2.30	2.3	87.0	4.9	111.5
93.00	92.95	0.11	2.38	2.4	87.4	4.8	100.1
94.00	93.95	0.10	2.47	2.5	87.7	4.7	96.7
95.00	94.94	0.10	2.55	2.6	87.8	5.4	96.2
96.00	95.94	0.09	2.65	2.6	88.0	5.5	97.5
97.00	96.93	0.09	2.74	2.7	88.2	5.2	97.7
98.00	97.93	0.08	2.83	2.8	88.3	5.5	89.3
99.00	98.93	0.08	2.93	2.9	88.4	5.4	86.6
100.00	99.92	0.08	3.02	3.0	88.4	5.4	82.3
101.00	100.92	0.09	3.12	3.1	88.4	5.7	91.5
102.00	101.91	0.09	3.22	3.2	88.4	5.4	90.8
103.00	102.91	0.09	3.32	3.3	88.4	5.8	88.2
104.00	103.90	0.10	3.42	3.4	88.4	6.6	84.5
105.00	104.90	0.10	3.52	3.5	88.4	6.1	91.1
106.00	105.89	0.11	3.63	3.6	88.3	5.8	75.3
107.00	106.89	0.11	3.73	3.7	88.3	5.7	87.9
108.00	107.88	0.11	3.83	3.8	88.3	5.5	90.1
109.00	108.88	0.11	3.93	3.9	88.4	6.0	81.1
110.00	109.87	0.11	4.03	4.0	88.4	6.3	84.2
111.00	110.86	0.12	4.14	4.1	88.4	6.4	84.9
112.00	111.86	0.13	4.25	4.3	88.3	6.5	72.0
113.00	112.85	0.13	4.36	4.4	88.3	6.2	78.9
114.00	113.84	0.14	4.47	4.5	88.3	6.4	91.5
115.00	114.84	0.15	4.59	4.6	88.2	6.5	85.0
116.00	115.83	0.16	4.70	4.7	88.1	6.9	86.9
117.00	116.82	0.17	4.82	4.8	88.0	7.1	79.4
118.00	117.82	0.19	4.95	5.0	87.8	7.3	78.0
119.00	118.81	0.21	5.08	5.1	87.6	7.8	85.4
120.00	119.80	0.23	5.21	5.2	87.5	7.0	85.8
121.00	120.79	0.24	5.34	5.3	87.4	7.4	86.7
122.00	121.78	0.27	5.47	5.5	87.2	7.9	79.5
123.00	122.77	0.29	5.61	5.6	87.1	7.8	81.0
124.00	123.76	0.30	5.74	5.7	87.0	8.1	84.0
125.00	124.75	0.32	5.88	5.9	86.9	8.3	84.9
126.00	125.74	0.33	6.03	6.0	86.9	8.7	90.5
127.00	126.73	0.35	6.18	6.2	86.7	8.6	82.5
128.00	127.72	0.37	6.32	6.3	86.6	8.2	84.0
129.00	128.71	0.39	6.47	6.5	86.6	9.1	78.9
130.00	129.69	0.41	6.63	6.6	86.5	9.1	77.8
131.00	130.68	0.43	6.79	6.8	86.3	9.5	83.5
132.00	131.67	0.46	6.95	7.0	86.2	9.4	83.2
133.00	132.65	0.48	7.11	7.1	86.2	9.1	84.2
134.00	133.64	0.48	7.27	7.3	86.2	9.0	87.3
135.00	134.63	0.50	7.43	7.4	86.2	9.6	80.5
136.00	135.61	0.52	7.60	7.6	86.1	9.8	85.8
137.00	136.60	0.53	7.77	7.8	86.1	10.4	82.8
138.00	137.58	0.55	7.94	8.0	86.1	10.0	83.0
139.00	138.57	0.56	8.11	8.1	86.0	9.6	86.2
140.00	139.55	0.58	8.28	8.3	86.0	9.4	83.8
141.00	140.54	0.59	8.45	8.5	86.0	9.8	86.0
142.00	141.52	0.61	8.62	8.6	86.0	10.0	83.0
143.00	142.51	0.62	8.80	8.8	86.0	9.9	82.1
144.00	143.49	0.64	8.97	9.0	85.9	10.1	85.7
145.00	144.48	0.65	9.14	9.2	85.9	10.3	82.0
146.00	145.46	0.67	9.32	9.3	85.9	10.1	89.3
147.00	146.45	0.69	9.49	9.5	85.8	10.4	86.7
148.00	147.43	0.72	9.67	9.7	85.8	9.9	77.0
149.00	148.42	0.73	9.84	9.9	85.7	9.8	85.7
150.00	149.40	0.75	10.01	10.0	85.7	9.9	79.6
151.00	150.39	0.78	10.18	10.2	85.6	10.3	81.2
152.00	151.37	0.80	10.36	10.4	85.6	9.8	94.2
153.00	152.36	0.82	10.53	10.6	85.6	10.0	83.5
154.00	153.34	0.84	10.70	10.7	85.5	9.5	78.8
155.00	154.33	0.86	10.87	10.9	85.5	10.1	83.2
156.00	155.31	0.87	11.04	11.1	85.5	10.0	86.4
157.00	156.30	0.89	11.21	11.2	85.4	9.8	84.7
158.00	157.28	0.91	11.38	11.4	85.4	9.8	81.5
159.00	158.27	0.93	11.55	11.6	85.4	9.6	80.4
160.00	159.25	0.96	11.71	11.8	85.3	9.8	81.2
161.00	160.24	0.98	11.88	11.9	85.3	9.8	82.8
162.00	161.22	1.01	12.05	12.1	85.2	9.9	79.6
163.00	162.21	1.03	12.22	12.3	85.2	9.9	78.7
164.00	163.19	1.06	12.39	12.4	85.1	10.1	78.3
165.00	164.18	1.09	12.56	12.6	85.0	9.8	83.0
166.00	165.16	1.12	12.73	12.8	85.0	10.2	82.1
167.00	166.15	1.16	12.90	13.0	84.9	10.1	79.7
168.00	167.13	1.19	13.08	13.1	84.8	10.9	83.1
169.00	168.11	1.22	13.25	13.3	84.7	11.8	78.6
170.00	169.10	1.24	13.44	13.5	84.7	10.6	78.8
171.00	170.08	1.28	13.62	13.7	84.6	10.8	79.0
172.00	171.06	1.32	13.80	13.9	84.5	11.0	79.9
173.00	172.04	1.35	13.99	14.1	84.5	10.9	80.7
174.00	173.03	1.37	14.18	14.2	84.5	10.9	76.4
175.00	174.01	1.41	14.36	14.4	84.4	11.0	75.5
176.00	174.99	1.44	14.55	14.6	84.3	10.9	79.9
177.00	175.97	1.47	14.73	14.8	84.3	10.9	80.0
178.00	176.95	1.50	14.92	15.0	84.3	10.9	81.3
179.00	177.94	1.53	15.11	15.2	84.2	10.9	81.3
180.00	178.92	1.56	15.29	15.4	84.2	10.5	83.3
181.00	179.90	1.59	15.48	15.6	84.2	11.0	79.2
182.00	180.88	1.62	15.67	15.7	84.1	10.4	84.6
182.36	181.20	1.63	15.73	15.8	84.1	11.1	78.9

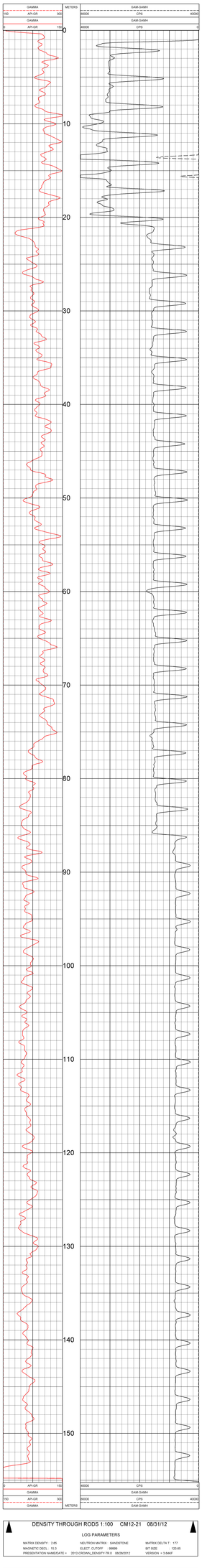

GAMMA - NEUTRON
THROUGH RODS
CM12-19
Baroid
Drilling Fluids
MUD TYPE
MUD WEIGHT
VISCOSITY
PH
FLUID LOSS
CHLORIDES
CALCIUM
SOLIDS
SAND
MBT
PM FILTRATE
PF/MF
RM @ MEAS. TEMP.
RM @ BHST
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
SOURCE OF RMF
RMC @ MEAS. TEMP.
SOURCE OF RMC
RM @ BHST
RMF @ BHST
RMC @ BHST
TIME CIRC. STOPPED
TIME LOGGER ON BOTTOM
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
RUN NO.
DEPTH DRILLER
DEPTH LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING DRILLER
CASING LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF
SOURCE



DENSITY THROUGH RODS 1:100 CM12-21 08/31/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAMEGATE = 2012-CROWN_DENSITY-TR-3 06/26/2012 VERSION = 3.64KF



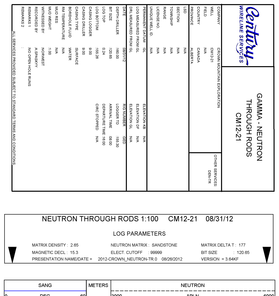
DENSITY THROUGH RODS 1:100 CM12-21 08/31/12

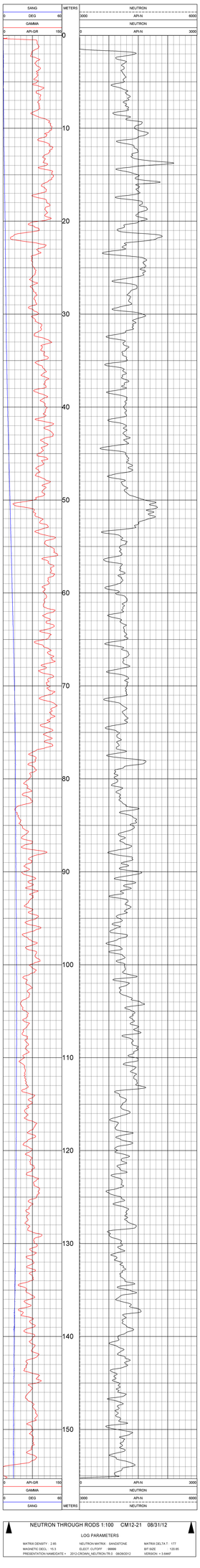
LOG PARAMETERS

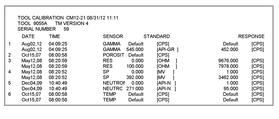
MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAMEGATE = 2012-CROWN_DENSITY-TR-3 06/26/2012 VERSION = 3.64KF

TOOL CALIBRATION CM12-21 09/01/12 10:37
TOOL: 9396A SW VERSION 5
SERIAL NUMBER : 643

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug28,12	07:52:32	GAMMA	Default	[CPS]	Default	[CPS]
	Aug28,12	07:52:32	GAMMA	545.000	[API-GR]	195.950	[CPS]







TOOL CALIBRATION CM12-21 08/31/12 11:11
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME
1	Aug01,12	04:09:25
	Aug01,12	04:09:25
2	Mar12,08	08:20:59
3	Mar12,08	08:20:59
4	Mar12,08	08:20:59
	Mar12,08	08:20:52
	Mar12,08	08:20:52
5	Oct04,08	10:40:49
	Oct04,08	10:40:49
6	Oct15,07	08:00:56
	Oct15,07	08:00:56

SENSOR	STANDARD		RESPONCE	
GAMMA	Default	[CPS]	Default	[CPS]
GAMMA	API 200	[API-GR]	452.000	[CPS]
WEIGHT	Default	[LBS]		
RES	0.000	[OHM]	9676.000	[CPS]
RES	100.000	[OHM]	7978.000	[CPS]
SP	0.000	[MV]	1.000	[CPS]
SP	100.000	[MV]	3462.000	[CPS]
NEUTRON	0.000	[API-N]	0.000	[CPS]
NEUTRC	271.000	[API-N]	55.000	[CPS]
TEMP	Default	[CPS]	Default	[CPS]
TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-24

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-24
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:10/05/12	RIG NUMBER	:GED
DEPTH DRILLER	:157.00	LOGGER TD	:157.00
BIT SIZE	:120.65	ARRIVAL TIME	:11:00
LOG TOP	:0.00	DEPARTURE TIME	:16:00
LOG BOTTOM	:156.74	CIRC STOPPED	:N/A
CASING LOGGER	:24.40		
CASING DRILLER	:24.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

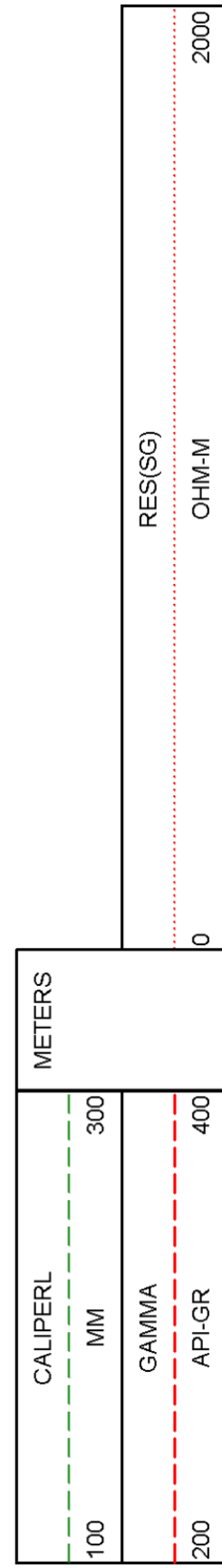
DENSITY 1:100 CM12-24 10/05/12

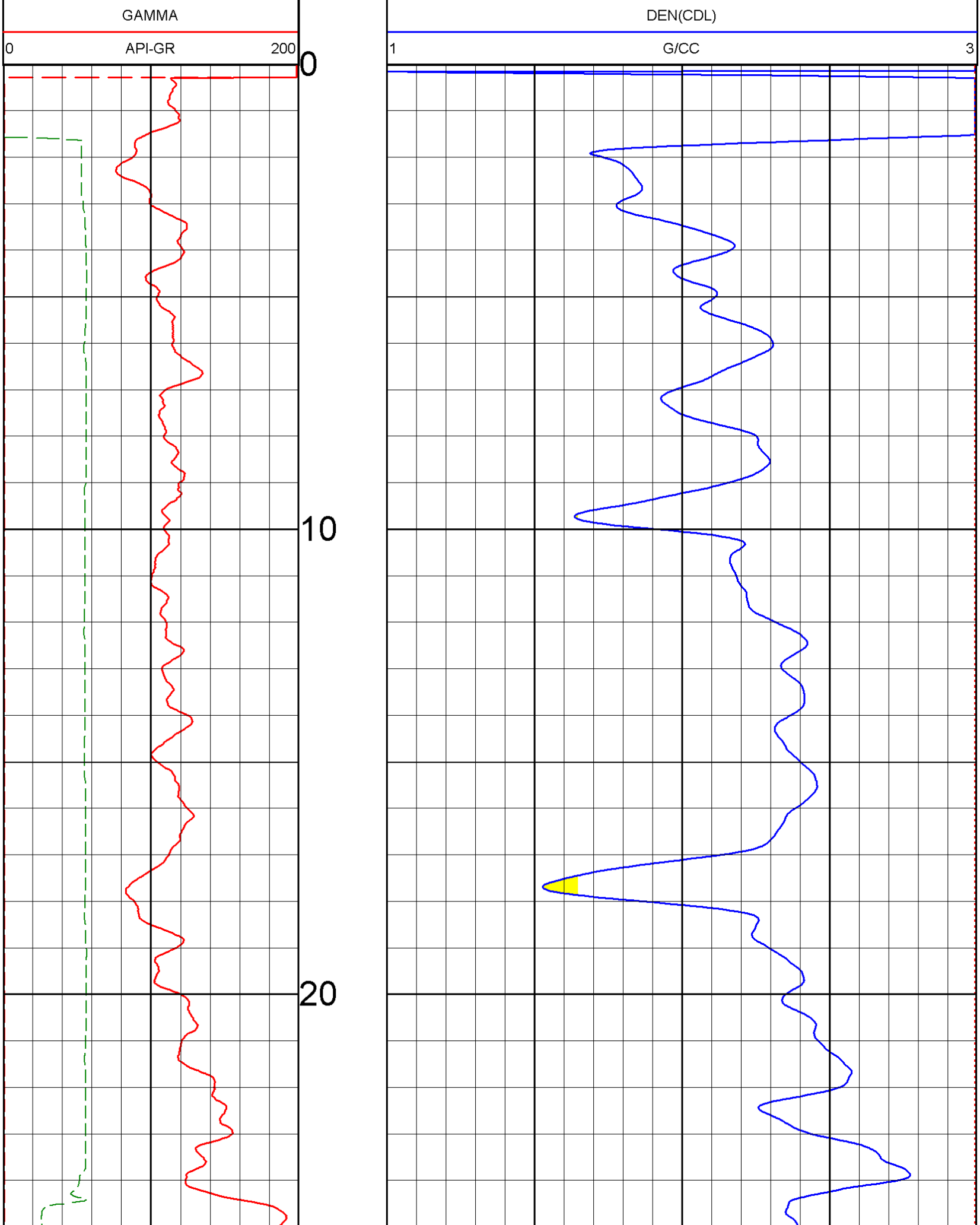
LOG PARAMETERS

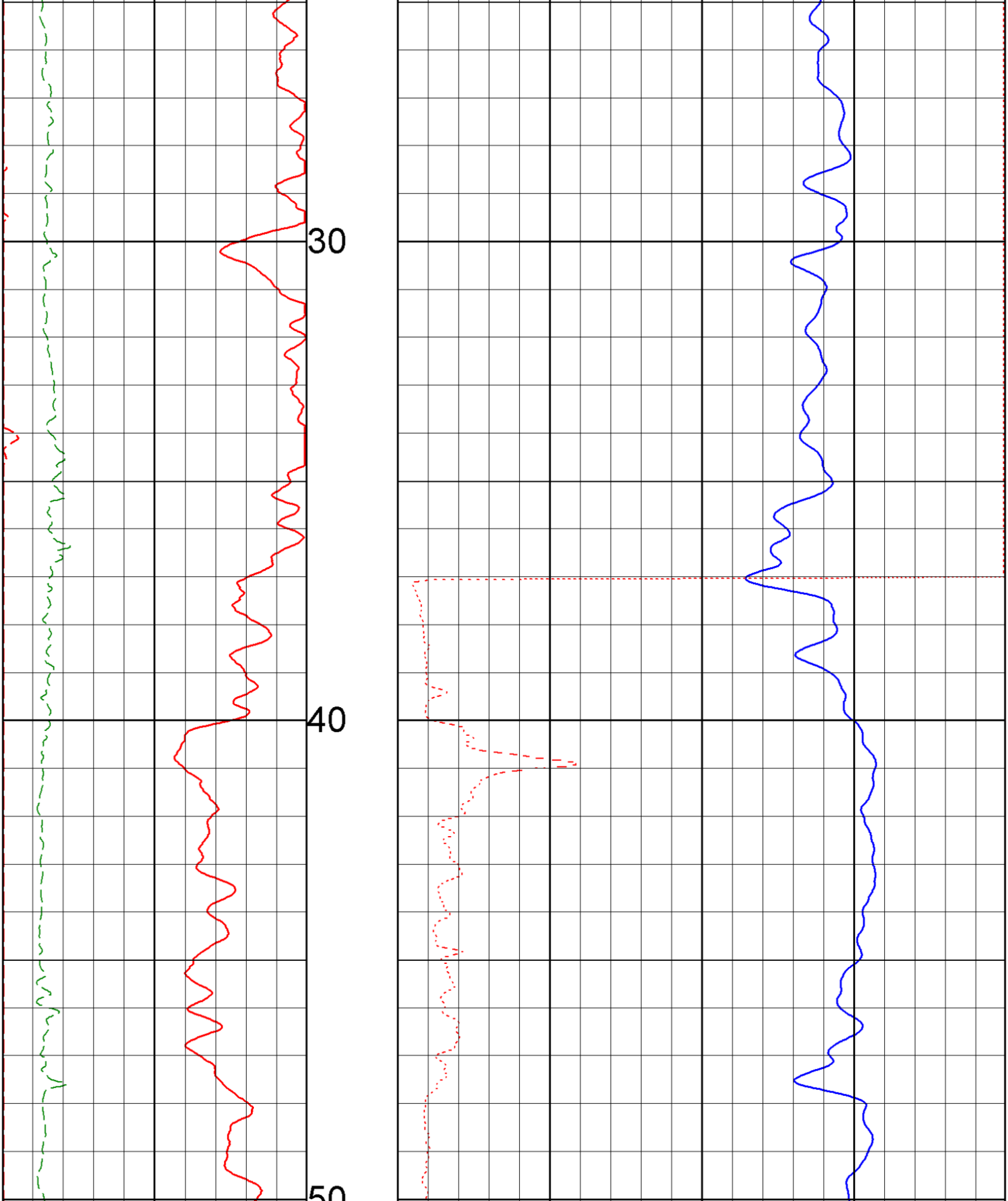
MATRIX DENSITY : 2.65
MAGNETIC DECL : 15.3
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012

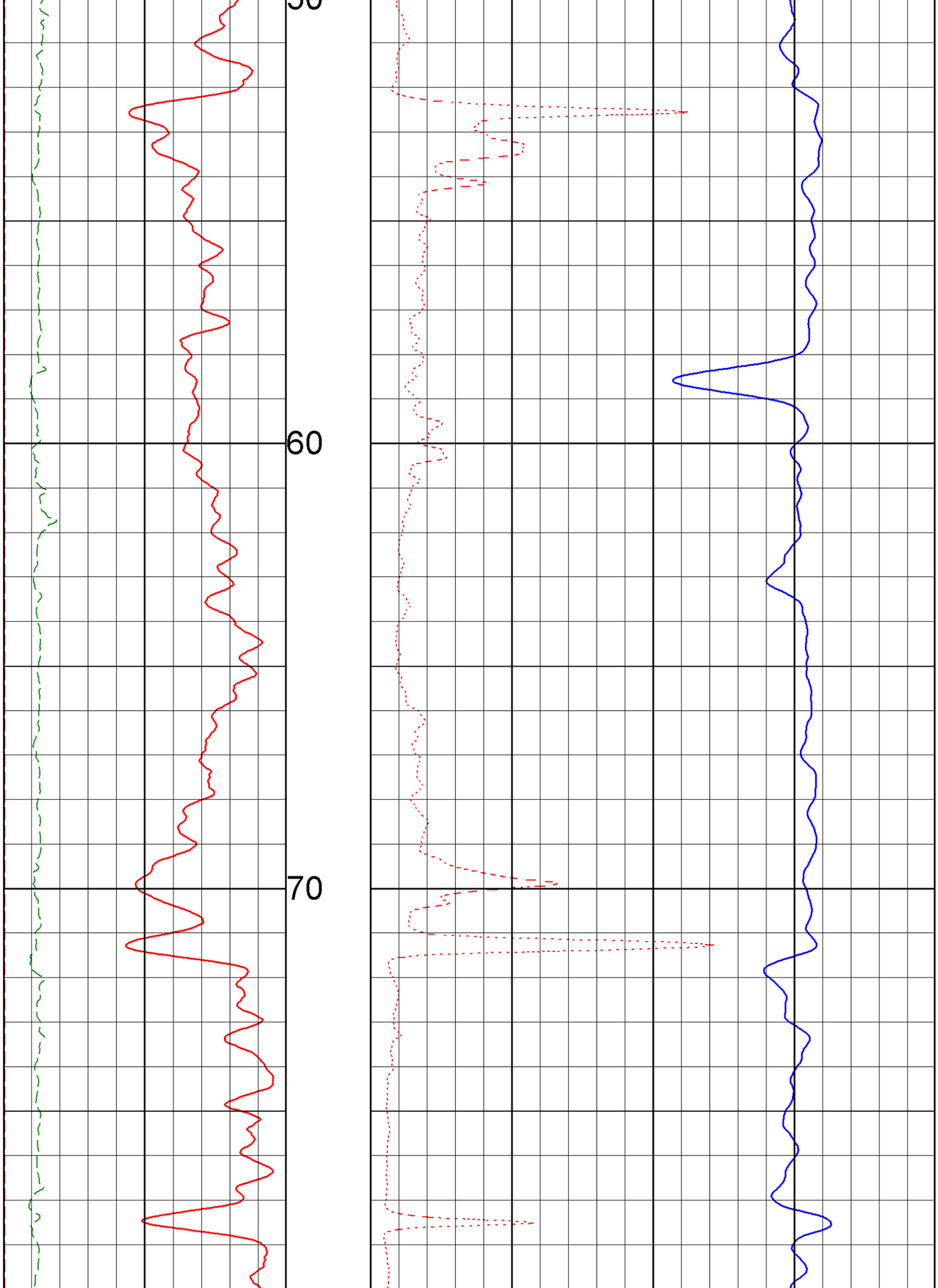
NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

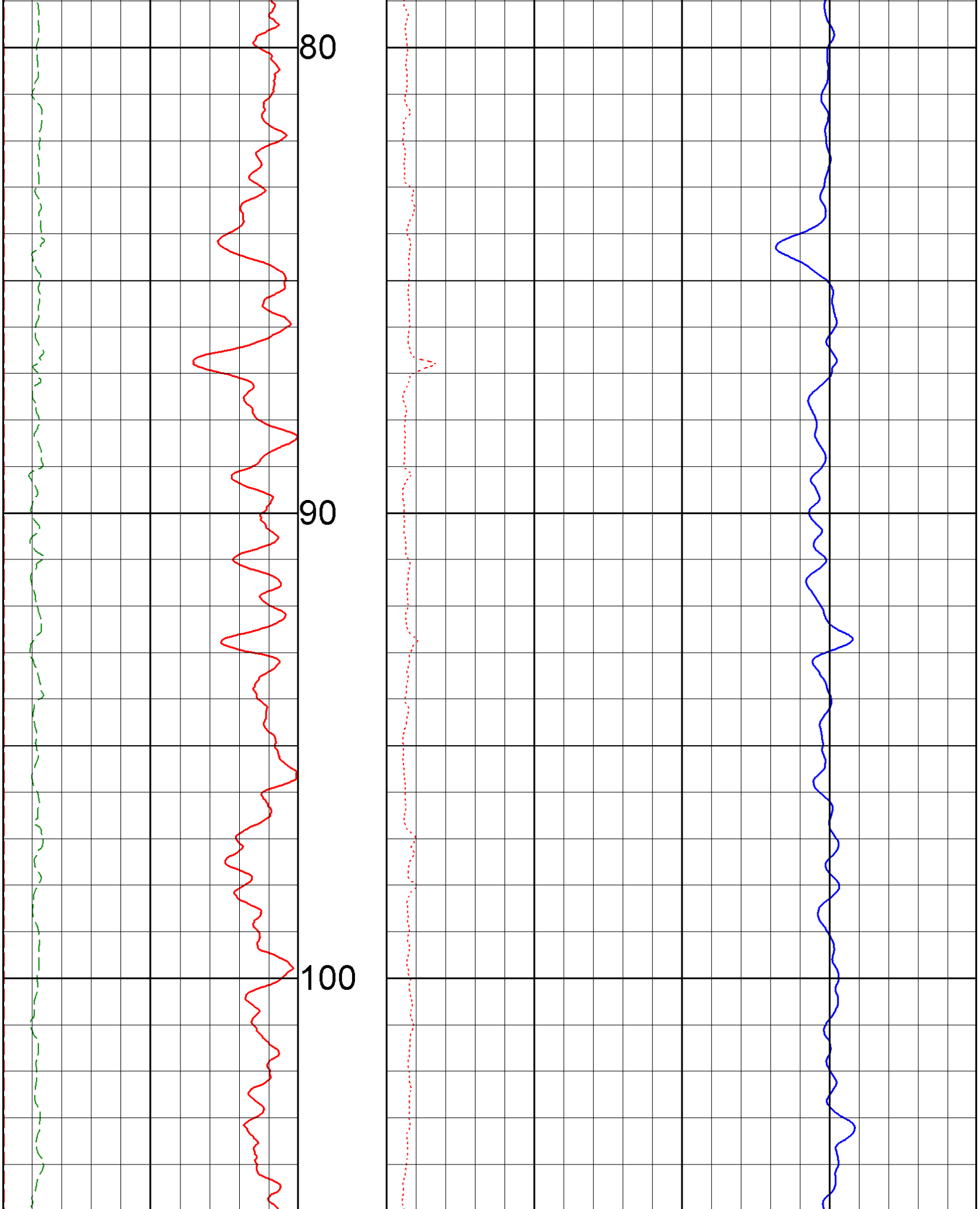
MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KF

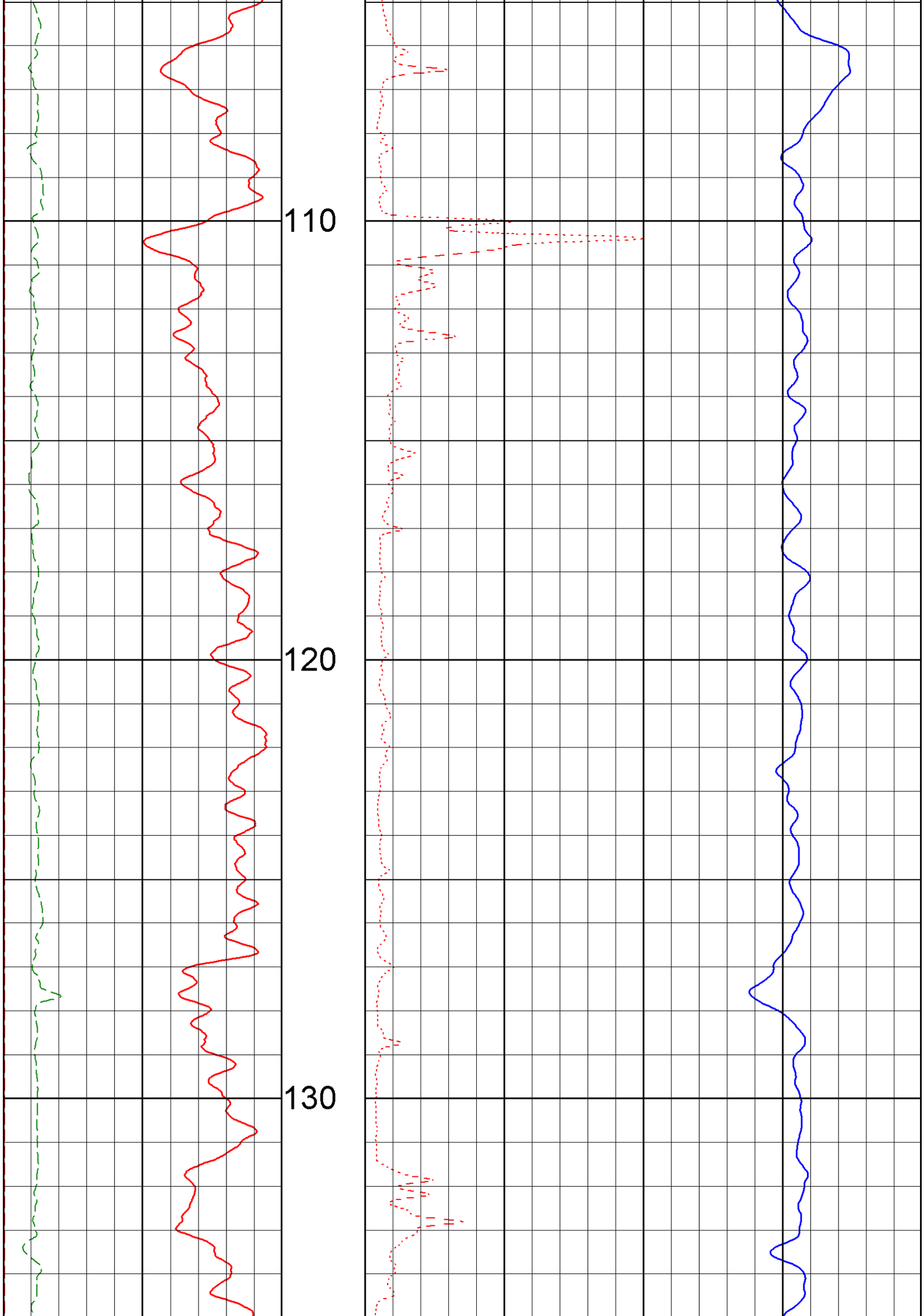


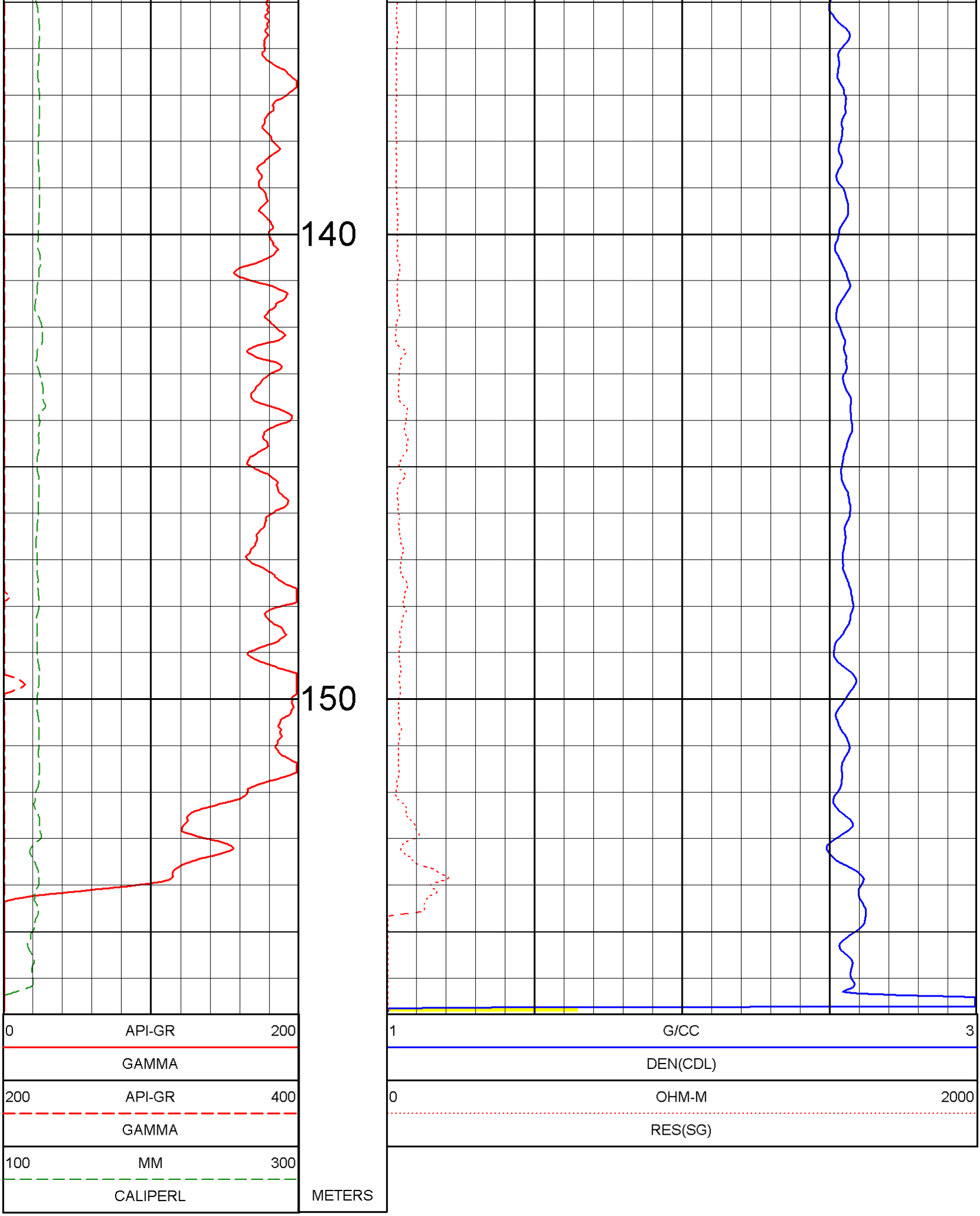

GAMMA
0
API-GR
200
DEN(CDL)
1
G/CC
3
0
10
20


30
40
50


50
60
70


80
90
100


110
120
130


140
150
0
API-GR
200
GAMMA
200
API-GR
400
GAMMA
100
MM
300
CALIPERL
METERS
1
G/CC
3
DEN(CDL)
0
OHM-M
2000
RES(SG)

DENSITY 1:100 CM12-24 10/05/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM12-24 10/05/12 14:43
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

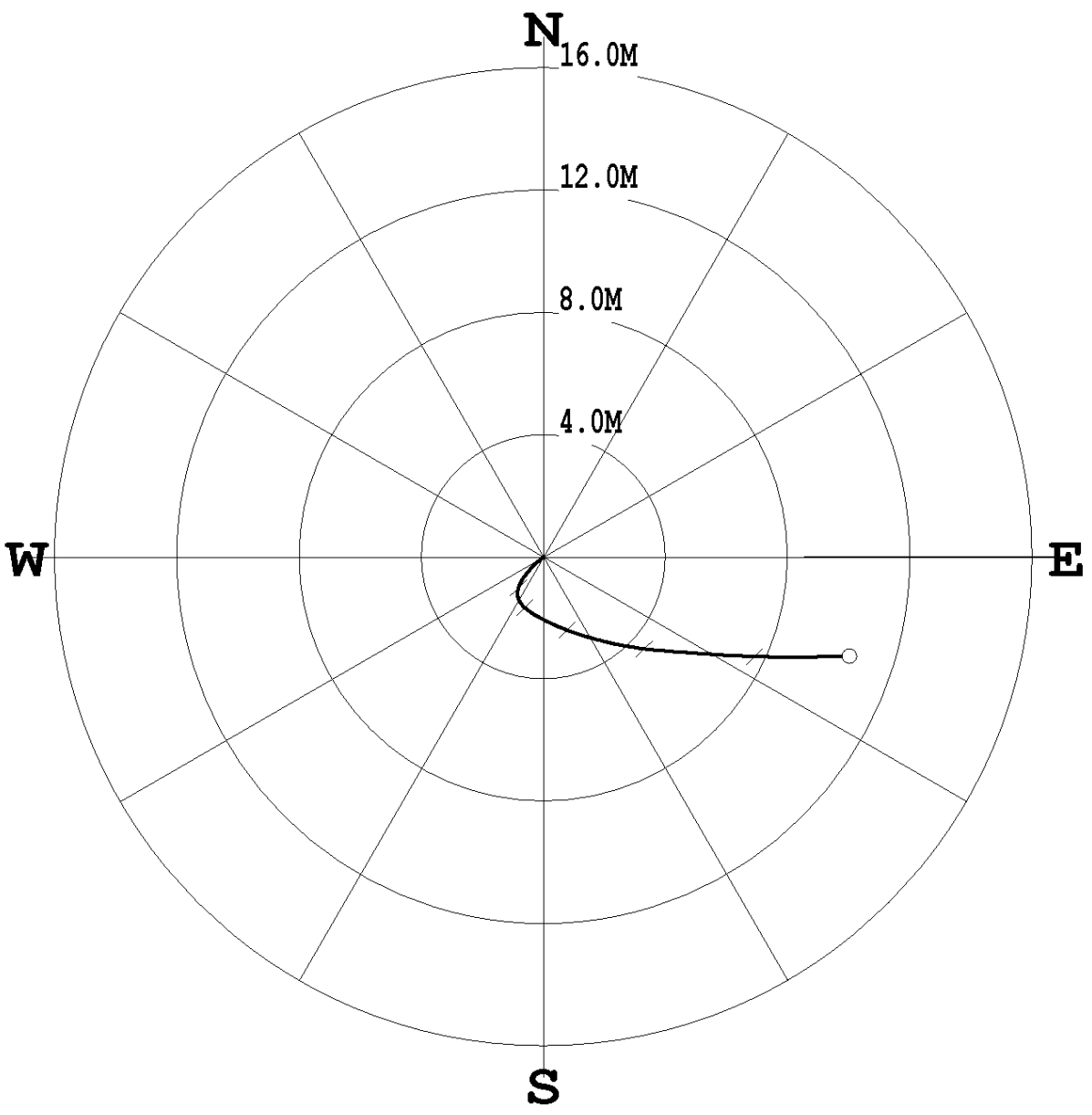
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Oct05,12	15:04:40	DEN(SS)	2.580	[G/CC]	21473.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-24
DATE OF LOG: 10/05/12
PROBE: 9055A 59

MAG DECL: 15.3

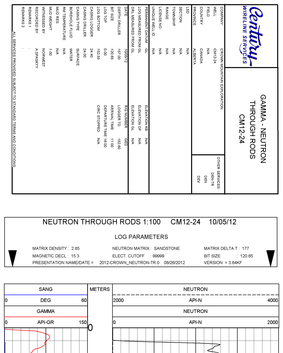
SCALE: 2 M/CM
TRUE DEPTH: 155.81 M
AZIMUTH: 108.0
DISTANCE: 10.5 M
+ = 20 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY GEO
DATA FROM : N/A
MAG. DECL. : 15.300
HOLE ID. : CM12-24
DATE OF LOG : 10/05/12
PROBE : 9055A , 59
DEPTH UNITS : METERS
LOG: CM12-24_10-05-12_14-07_9055A_.02_27.00_156.71_DEVI.log

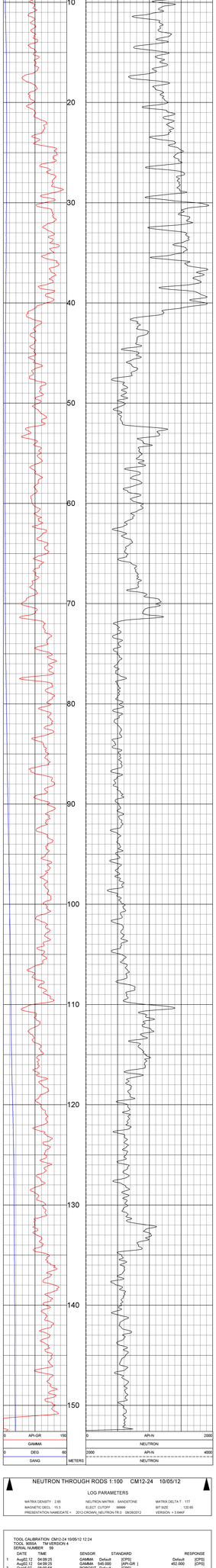
CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
27.04	27.04	-0.00	-0.00	0.0	242.3	3.3	242.3
28.00	28.00	-0.03	-0.05	0.1	237.7	3.3	233.7
29.00	29.00	-0.06	-0.09	0.1	235.0	3.1	223.3
30.00	30.00	-0.10	-0.13	0.2	232.8	2.7	219.6
31.00	30.99	-0.13	-0.17	0.2	232.3	2.8	222.9
32.00	31.99	-0.17	-0.21	0.3	231.6	2.8	232.5
33.00	32.99	-0.20	-0.24	0.3	230.7	2.9	233.5
34.00	33.99	-0.24	-0.28	0.4	230.3	2.9	224.0
35.00	34.99	-0.27	-0.32	0.4	230.1	2.8	231.5
36.00	35.99	-0.30	-0.36	0.5	229.7	2.7	220.5
37.00	36.99	-0.33	-0.39	0.5	229.0	2.4	226.2
38.00	37.99	-0.37	-0.42	0.6	228.7	2.6	231.2
39.00	38.98	-0.40	-0.44	0.6	227.9	2.1	204.2
40.00	39.98	-0.43	-0.47	0.6	227.3	2.5	220.3
41.00	40.98	-0.47	-0.50	0.7	226.9	2.4	208.5
42.00	41.98	-0.50	-0.53	0.7	226.7	2.5	229.4
43.00	42.98	-0.53	-0.56	0.8	226.3	2.1	213.4
44.00	43.98	-0.56	-0.58	0.8	225.7	2.0	217.5
45.00	44.98	-0.59	-0.60	0.8	225.3	2.5	221.9
46.00	45.98	-0.62	-0.62	0.9	224.9	2.0	228.9
47.00	46.98	-0.65	-0.64	0.9	224.7	2.3	216.8
48.00	47.98	-0.68	-0.67	1.0	224.4	2.1	212.6
49.00	48.98	-0.71	-0.68	1.0	224.0	1.9	210.9
50.00	49.98	-0.74	-0.70	1.0	223.6	1.9	211.8
51.00	50.98	-0.76	-0.72	1.0	223.2	1.7	216.1
52.00	51.98	-0.79	-0.73	1.1	222.7	1.8	218.5
53.00	52.97	-0.82	-0.74	1.1	222.2	1.9	208.4
54.00	53.97	-0.85	-0.76	1.1	221.8	1.8	202.8
55.00	54.97	-0.87	-0.77	1.2	221.4	1.7	209.6
56.00	55.97	-0.90	-0.78	1.2	221.1	1.8	214.8
57.00	56.97	-0.93	-0.80	1.2	220.7	1.7	204.7
58.00	57.97	-0.95	-0.81	1.3	220.3	1.8	196.7
59.00	58.97	-0.98	-0.82	1.3	219.8	1.7	199.9
60.00	59.97	-1.01	-0.83	1.3	219.4	1.5	196.4
61.00	60.97	-1.03	-0.83	1.3	218.9	1.5	186.9
62.00	61.97	-1.06	-0.84	1.4	218.3	1.9	180.0
63.00	62.97	-1.09	-0.84	1.4	217.7	1.8	194.6
64.00	63.97	-1.12	-0.85	1.4	217.2	1.8	187.1
65.00	64.97	-1.15	-0.85	1.4	216.5	2.2	167.1
66.00	65.97	-1.18	-0.85	1.5	215.7	1.7	194.5
67.00	66.97	-1.22	-0.85	1.5	215.0	1.9	188.6
68.00	67.97	-1.25	-0.85	1.5	214.2	1.8	180.7
69.00	68.97	-1.28	-0.84	1.5	213.3	1.9	177.0
70.00	69.97	-1.32	-0.84	1.6	212.5	2.1	164.2
71.00	70.97	-1.35	-0.83	1.6	211.7	1.9	170.2
72.00	71.97	-1.38	-0.82	1.6	210.8	2.0	149.0
73.00	72.96	-1.41	-0.80	1.6	209.7	2.3	172.7
74.00	73.96	-1.44	-0.79	1.6	208.6	2.1	145.0
75.00	74.96	-1.48	-0.76	1.7	207.3	2.4	145.5
76.00	75.96	-1.52	-0.74	1.7	206.0	2.3	134.1
77.00	76.96	-1.55	-0.71	1.7	204.8	2.3	119.4
78.00	77.96	-1.58	-0.69	1.7	203.5	2.5	128.6
79.00	78.96	-1.62	-0.66	1.7	202.1	3.0	130.8
80.00	79.96	-1.65	-0.62	1.8	200.6	2.7	129.8
81.00	80.96	-1.68	-0.58	1.8	199.1	2.9	123.3
82.00	81.96	-1.72	-0.54	1.8	197.5	3.3	129.3
83.00	82.95	-1.75	-0.49	1.8	195.7	3.2	130.1
84.00	83.95	-1.79	-0.45	1.8	194.0	3.6	124.3
85.00	84.95	-1.82	-0.40	1.9	192.3	3.6	131.6
86.00	85.95	-1.86	-0.34	1.9	190.4	4.0	125.3
87.00	86.95	-1.89	-0.28	1.9	188.5	3.9	112.9
88.00	87.94	-1.92	-0.22	1.9	186.5	4.3	121.4
89.00	88.94	-1.96	-0.16	2.0	184.6	4.3	116.0
90.00	89.94	-2.00	-0.09	2.0	182.6	4.3	117.7
91.00	90.93	-2.03	-0.02	2.0	180.6	4.7	112.8
92.00	91.93	-2.07	0.05	2.1	178.5	5.2	118.6
93.00	92.93	-2.11	0.13	2.1	176.5	5.3	103.5
94.00	93.92	-2.15	0.21	2.2	174.3	5.2	114.9
95.00	94.92	-2.19	0.30	2.2	172.3	5.3	119.9
96.00	95.91	-2.23	0.38	2.3	170.3	5.4	113.2
97.00	96.91	-2.27	0.47	2.3	168.4	6.0	111.2
98.00	97.90	-2.30	0.55	2.4	166.5	5.9	106.9
99.00	98.90	-2.34	0.65	2.4	164.4	6.4	115.7
100.00	99.89	-2.38	0.75	2.5	162.5	6.4	116.0
101.00	100.89	-2.42	0.85	2.6	160.7	6.6	116.7
102.00	101.88	-2.46	0.95	2.6	158.8	6.5	107.3
103.00	102.87	-2.49	1.06	2.7	156.9	6.8	102.9
104.00	103.87	-2.53	1.18	2.8	155.1	7.2	116.3
105.00	104.86	-2.57	1.29	2.9	153.3	6.9	102.9
106.00	105.85	-2.60	1.40	3.0	151.7	7.1	126.4
107.00	106.84	-2.63	1.52	3.0	150.0	7.5	97.6
108.00	107.84	-2.67	1.64	3.1	148.5	7.1	92.3
109.00	108.83	-2.70	1.76	3.2	146.9	7.4	102.5
110.00	109.82	-2.73	1.88	3.3	145.5	7.1	112.5
111.00	110.81	-2.76	2.00	3.4	144.1	7.5	114.9
112.00	111.80	-2.79	2.13	3.5	142.7	7.4	102.8
113.00	112.79	-2.82	2.25	3.6	141.4	7.4	92.0
114.00	113.79	-2.85	2.38	3.7	140.1	7.8	100.2
115.00	114.78	-2.88	2.51	3.8	138.9	8.1	87.3
116.00	115.77	-2.90	2.65	3.9	137.6	8.2	100.6
117.00	116.76	-2.92	2.79	4.0	136.3	8.8	80.9
118.00	117.75	-2.94	2.94	4.2	135.1	8.6	107.0
119.00	118.73	-2.97	3.09	4.3	133.9	9.4	100.7
120.00	119.72	-2.99	3.24	4.4	132.7	9.1	97.5
121.00	120.71	-3.02	3.41	4.5	131.5	9.1	98.9
122.00	121.69	-3.03	3.57	4.7	130.3	9.8	93.5
123.00	122.68	-3.05	3.74	4.8	129.2	10.0	95.7
124.00	123.66	-3.06	3.91	5.0	128.0	10.3	97.7
125.00	124.65	-3.08	4.09	5.1	126.9	10.4	90.3
126.00	125.63	-3.09	4.27	5.3	125.9	10.0	90.7
127.00	126.62	-3.11	4.44	5.4	125.0	10.1	95.9
128.00	127.60	-3.12	4.62	5.6	124.0	10.2	88.5
129.00	128.58	-3.13	4.79	5.7	123.1	10.2	95.6
130.00	129.57	-3.14	4.97	5.9	122.3	10.4	94.3
131.00	130.55	-3.15	5.15	6.0	121.5	10.5	92.7
132.00	131.54	-3.16	5.33	6.2	120.7	10.3	92.8
133.00	132.52	-3.18	5.51	6.4	120.0	10.4	93.9
134.00	133.50	-3.19	5.68	6.5	119.3	10.7	90.8
135.00	134.49	-3.20	5.87	6.7	118.6	10.7	91.2
136.00	135.47	-3.21	6.05	6.8	118.0	10.3	91.4
137.00	136.45	-3.22	6.22	7.0	117.3	10.4	87.1
138.00	137.44	-3.23	6.41	7.2	116.7	10.3	94.0
139.00	138.42	-3.24	6.59	7.3	116.2	10.7	92.0
140.00	139.40	-3.24	6.78	7.5	115.6	9.9	92.5
141.00	140.38	-3.26	6.97	7.7	115.0	10.8	92.0
142.00	141.37	-3.26	7.16	7.9	114.5	11.0	94.8
143.00	142.35	-3.26	7.36	8.0	113.9	11.2	93.5
144.00	143.33	-3.26	7.55	8.2	113.4	11.1	93.7
145.00	144.31	-3.27	7.74	8.4	112.9	11.0	90.6
146.00	145.29	-3.27	7.93	8.6	112.4	10.7	94.2
147.00	146.27	-3.28	8.12	8.8	112.0	10.2	87.3
148.00	147.26	-3.28	8.30	8.9	111.6	10.6	96.4
149.00	148.24	-3.27	8.49	9.1	111.1	11.4	79.9
150.00	149.22	-3.27	8.68	9.3	110.6	11.4	89.3
151.00	150.20	-3.26	8.88	9.5	110.2	11.2	88.3
152.00	151.18	-3.26	9.07	9.6	109.8	11.0	94.6
153.00	152.16	-3.26	9.26	9.8	109.4	11.5	89.7
154.00	153.14	-3.25	9.46	10.0	108.9	11.9	86.1
155.00	154.12	-3.25	9.67	10.2	108.6	11.7	90.2
156.00	155.10	-3.25	9.87	10.4	108.2	11.7	86.7
156.72	155.77	-3.25	10.00	10.5	108.0	11.6	87.9



NEUTRON THROUGH RODS 1:100 CM12-24 10/05/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAMEDATE =	2012-CROWN_NEUTRON-TR.0 : 06/26/2012	VERSION = 3.64nF



NEUTRON THROUGH RODS 1:100 CM12-24 10/05/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAMEDATE =	2012-CROWN_NEUTRON-TR.0 : 06/26/2012	VERSION = 3.64nF

TOOL CALIBRATION CM12-24 10/05/12 12:24
TOOL 9055A TM VERSION 4
SERIAL NUMBER 56

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug01:12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug01:12	04:09:25	GAMMA	545.000	[API-GR]	452.955	[CPS]
2	Oct15:07	08:00:58	POROSIT	Default	[CPS]		
3	May12:06	08:29:59	RES	0.000	[OHM]	9678.000	[CPS]
	May12:06	08:29:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12:06	08:29:59	SP	0.000	[MV]	3482.000	[CPS]
	May12:06	08:29:53	SP	30.000	[MV]	2482.000	[CPS]
5	Dec04:09	10:40:49	NEUTRON	0.000	[API-N]	1.000	[CPS]
	Dec04:09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15:07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15:07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-25

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-25
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL
LOG MEASURED FROM	:GL
DRL MEASURED FROM	:GL

ELEVATION KB	:N/A
ELEVATION DF	:N/A
ELEVATION GL	:N/A

DATE	:10/04/12
DEPTH DRILLER	:133.00
BIT SIZE	:120.65
LOG TOP	:0.00
LOG BOTTOM	:33.77
CASING LOGGER	:15.20
CASING DRILLER	:15.00
CASING TYPE	:SURFACE
BOREHOLE FLUID	:WATER
RM TEMPERATURE	:N/A
MUD RES	:N/A
MUD WEIGHT	:1.00
WITNESSED BY	:NORWEST
RECORDED BY	:A.SPASKYY
REMARKS 1	:OPEN HOLE BRIDGED AT 34.10M
REMARKS 2	:

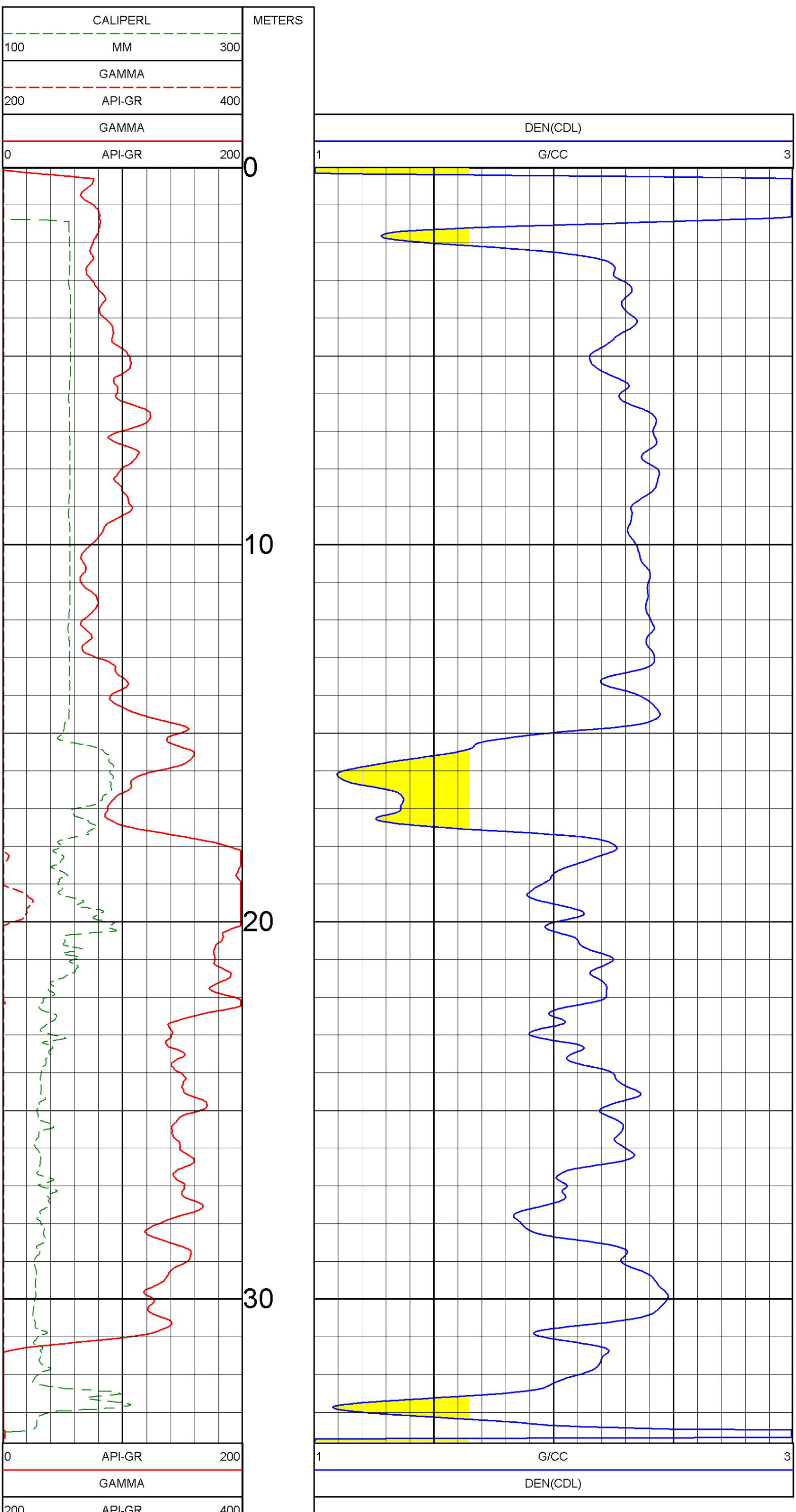
RIG NUMBER	:GED
LOGGER TD	:34.10
ARRIVAL TIME	:12:30
DEPARTURE TIME	:16:00
CIRC STOPPED	:N/A

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DENSITY 1:100 CM12-25 10/04/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-NORES.0 10/04/2012	VERSION = 3.64KF



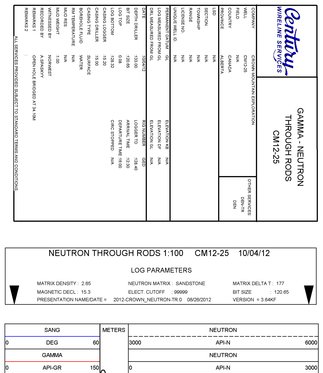
DENSITY 1:100 CM12-25 10/04/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-NORES.0 10/04/2012	VERSION = 3.64KF

TOOL CALIBRATION CM12-25 10/04/12 15:41
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		


Century
WIRELINE SERVICES
GAMMA - NEUTRON
THROUGH RODS
CM12-25
COMPANY
CENTURY WIRELINE SERVICES
WELL
CM12-25
FIELD
COUNTY
STATE
LOCATION
OTHER SERVICES
NONE
PERMANENT DATUM
GROUND LEVEL
ELEV.
LOG MEASURED FROM
KELLY BUSHING
DRILLING MEASURED FROM
KELLY BUSHING
ELEV.
DATE
RUN NO.
DEPTH DRILLER
DEPTH LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING DRILLER
CASING LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENS.
VISC.
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
RUN 1
RUN 2
RUN 3
N/A
N/A
N/A

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-28

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-28
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
NEU-TR
DEN-TR
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:10/03/12	RIG NUMBER	:GED
DEPTH DRILLER	:142.00	LOGGER TD	:139.50
BIT SIZE	:120.65	ARRIVAL TIME	:11:30
LOG TOP	:0.00	DEPARTURE TIME	:16:00
LOG BOTTOM	:138.35	CIRC STOPPED	:N/A
CASING LOGGER	:3.00		
CASING DRILLER	:3.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

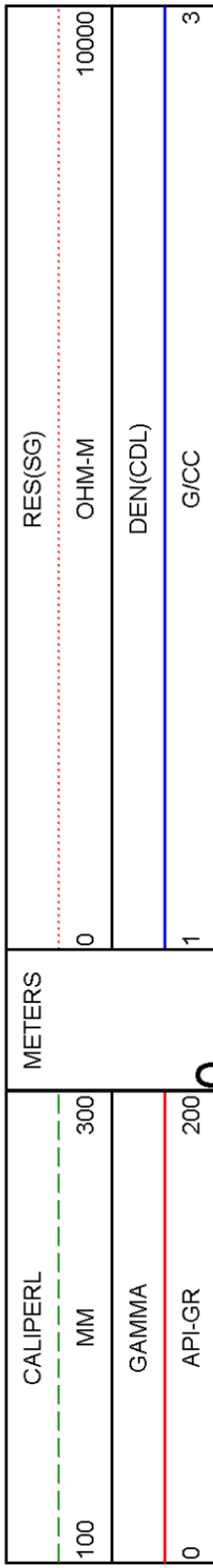
DENSITY 1:100 CM12-28 10/03/12

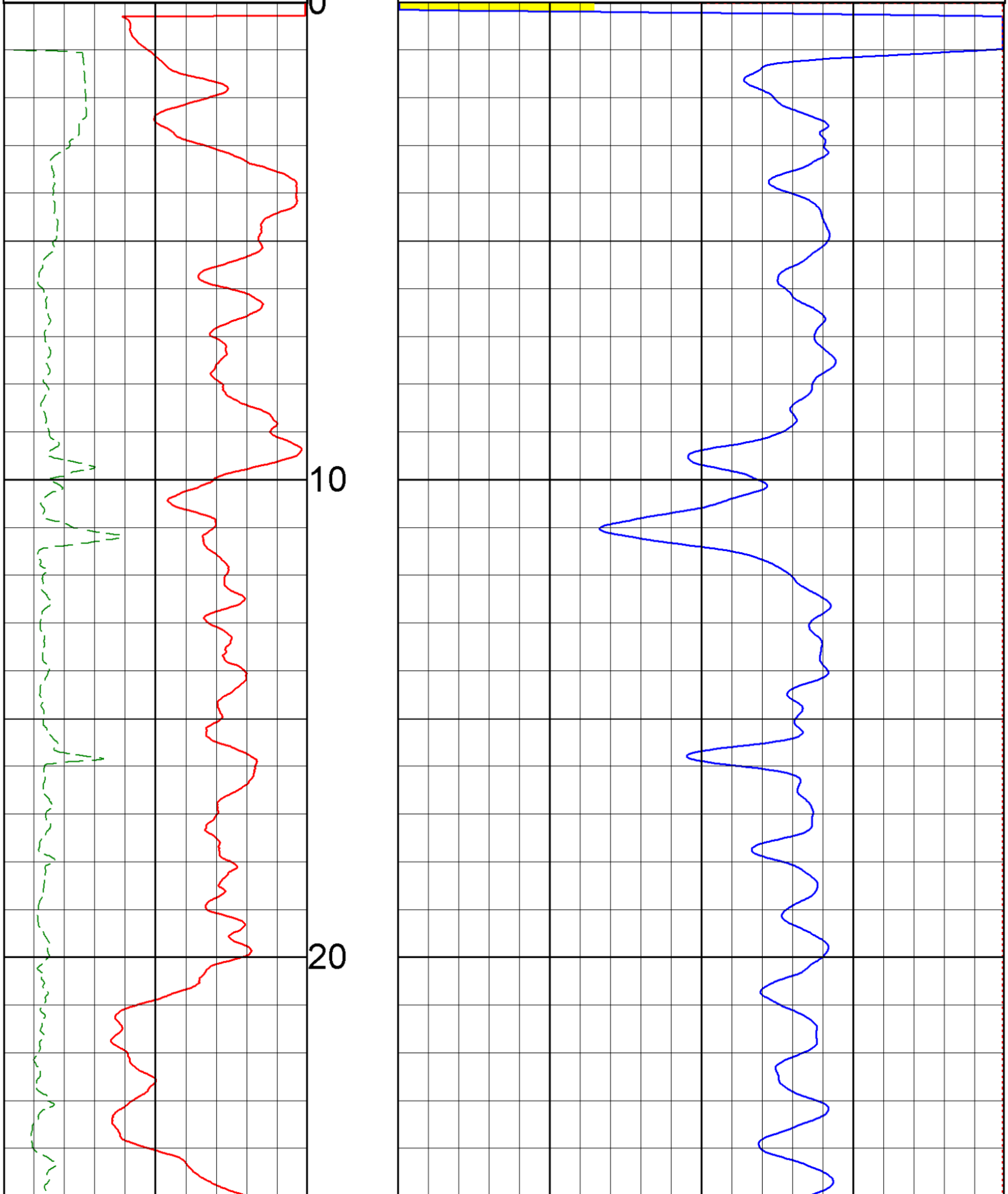
LOG PARAMETERS

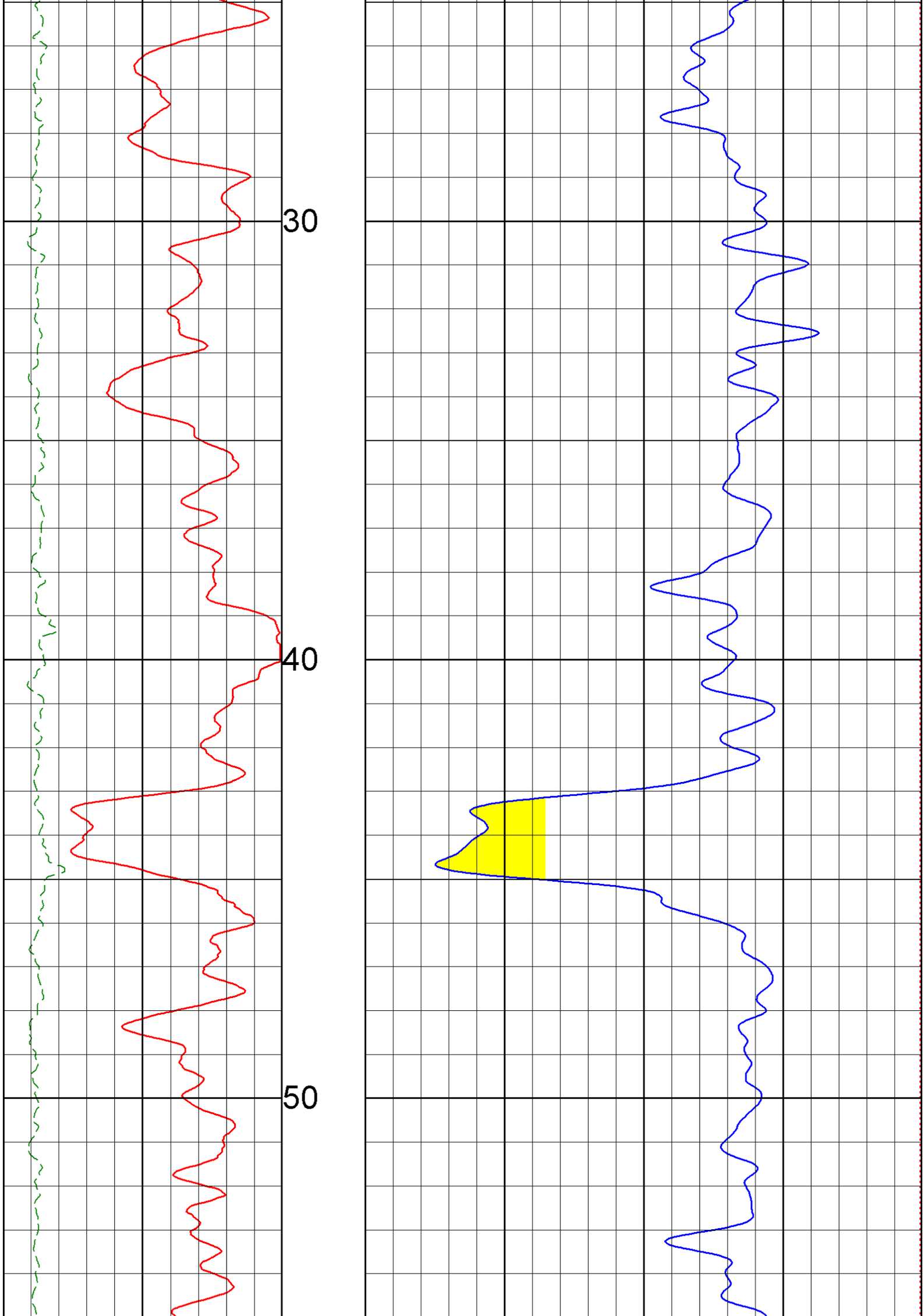
MATRIX DENSITY : 2.65
MAGNETIC DECL : 15.3
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012

NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 99999

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KF




0
10
20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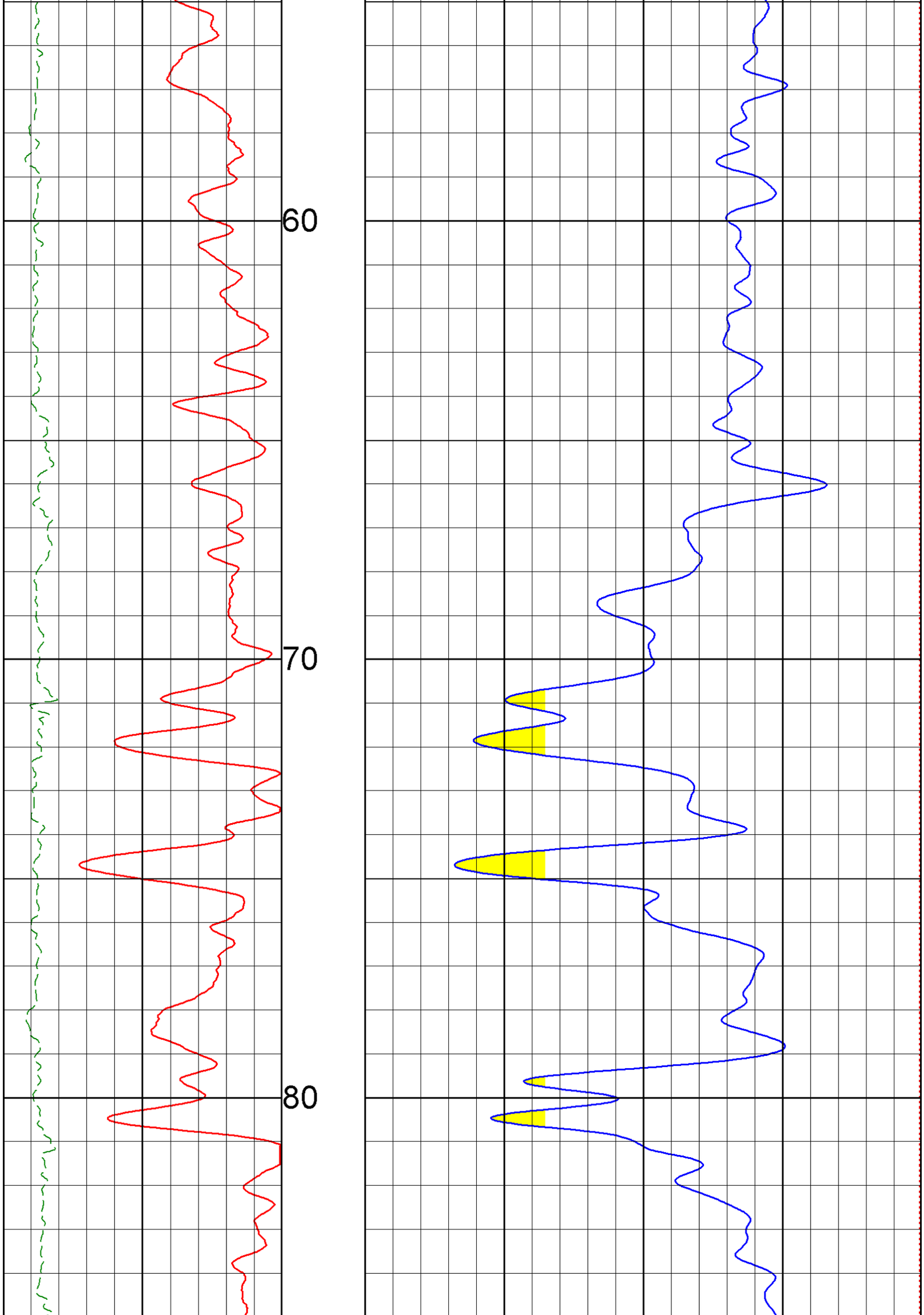
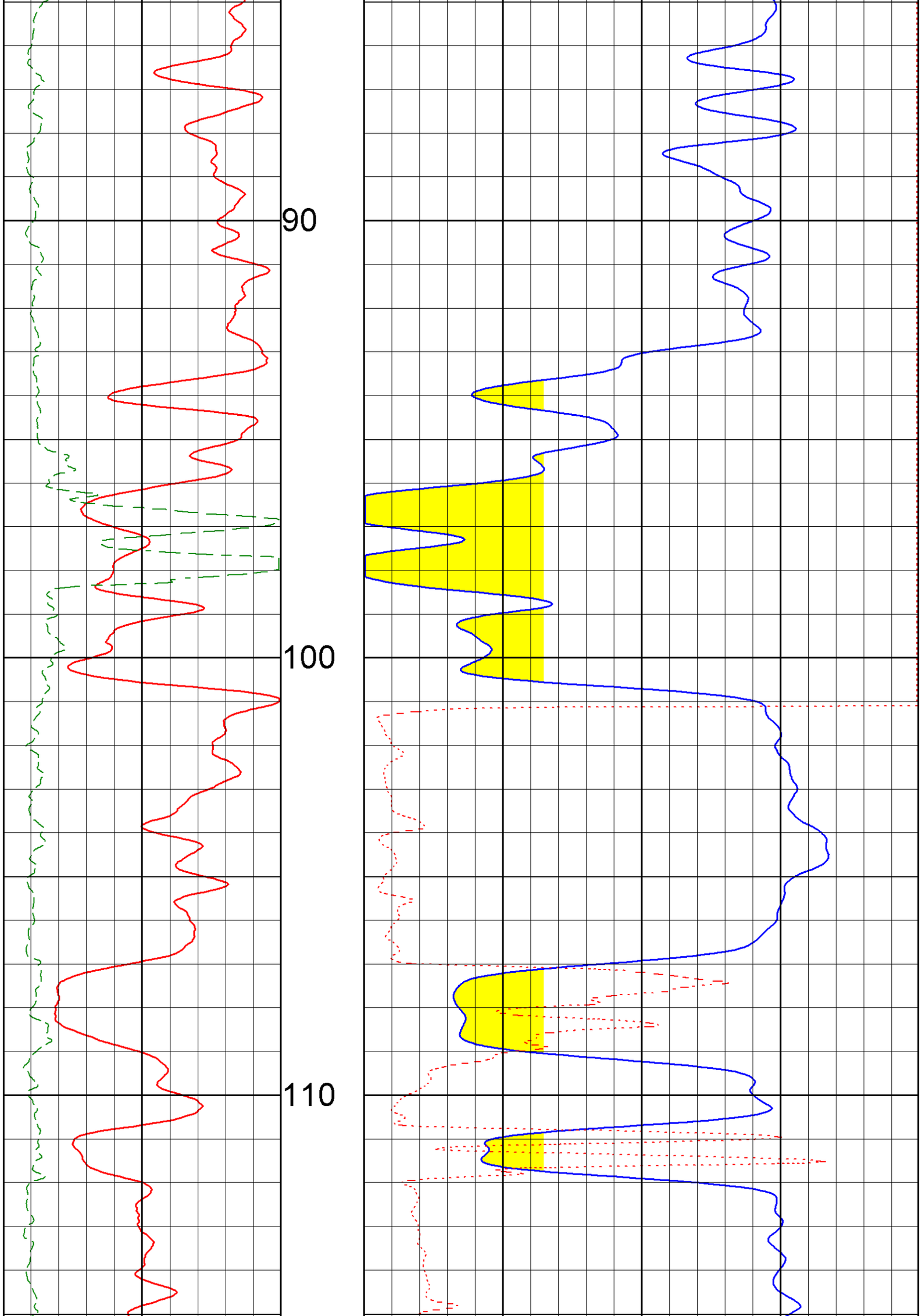
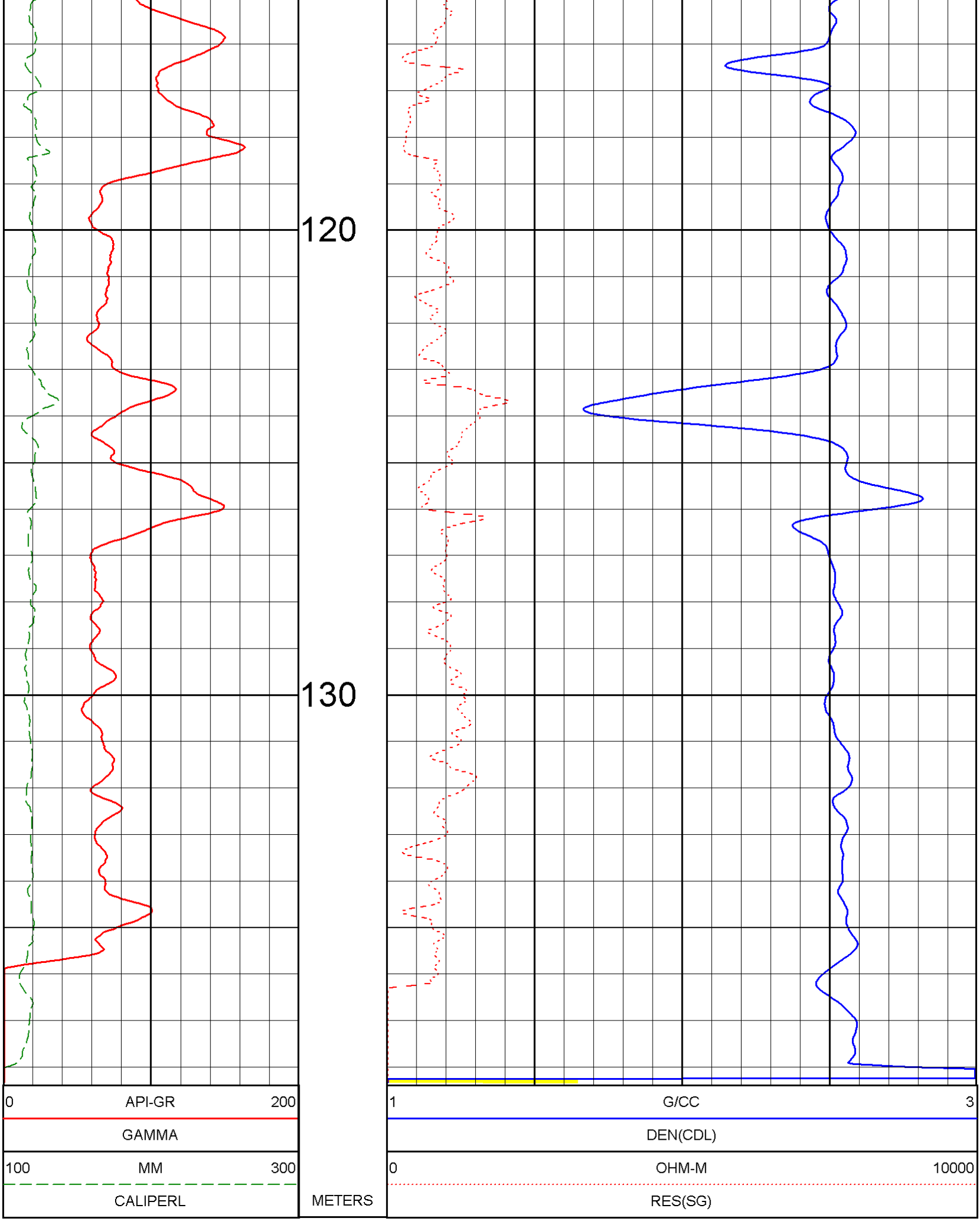

60
70
80


90
100
110


120
130
0
API-GR
200
GAMMA
100
MM
300
CALIPERL
METERS
1
G/CC
3
DEN(CDL)
0
OHM-M
10000
RES(SG)

DENSITY 1:100 CM12-28 10/03/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM12-28 10/03/12 15:21
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

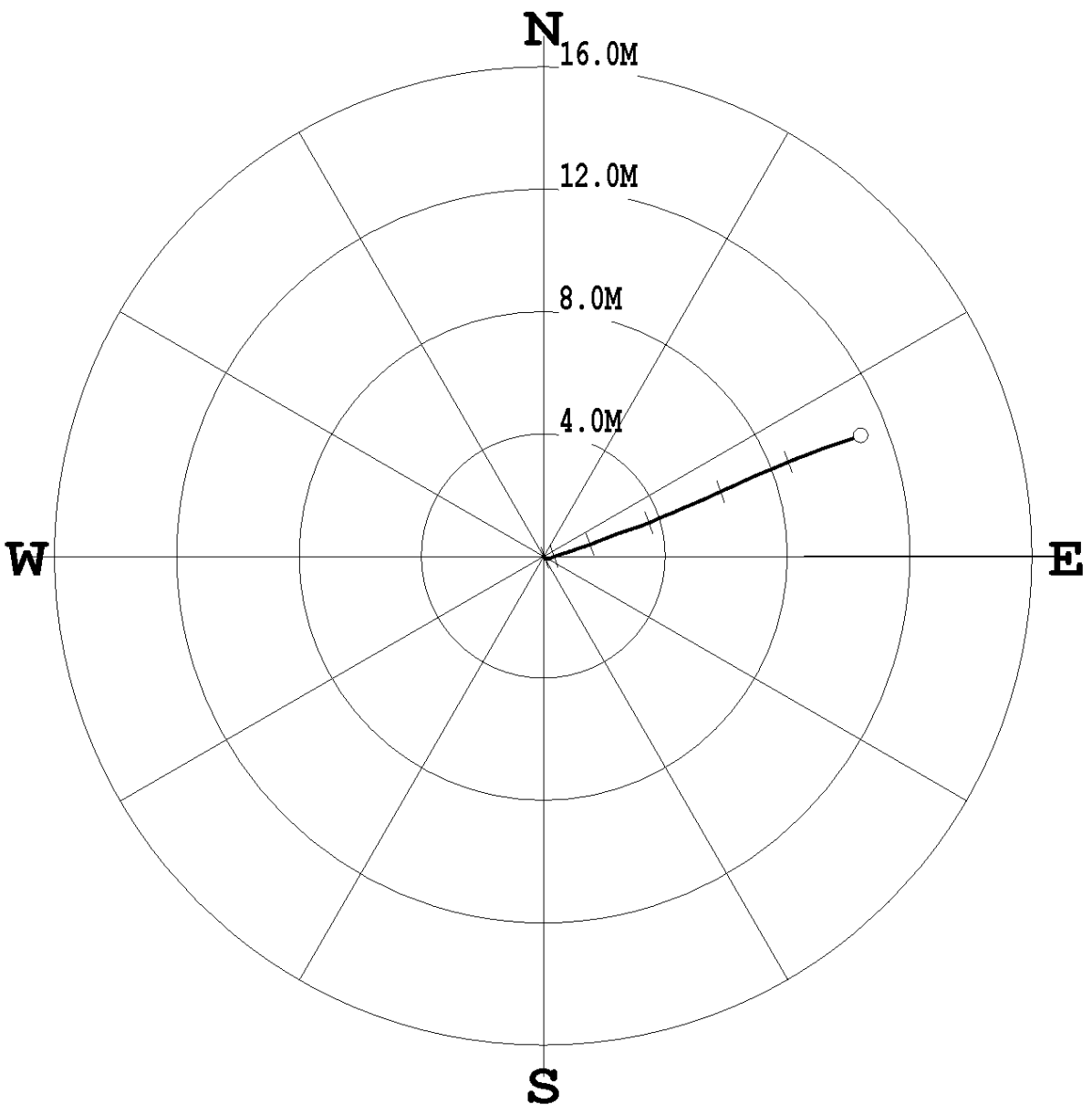
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-28
DATE OF LOG: 10/03/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 2 M/CM
TRUE DEPTH: 138.76 M
AZIMUTH: 69.2
DISTANCE: 11.1 M
+ = 20 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY GEO
DATA FROM : N/A
MAG. DECL. : 15.300
HOLE ID. : CM12-28
DATE OF LOG : 10/03/12
PROBE : 9055A , 59
DEPTH UNITS : METERS
LOG: CM12-28_10-03-12_14-47_9055A_.02_6.00_139.40_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
6.00	6.00	0.00	0.00	0.0	28.2	0.5	28.2
7.00	7.00	0.00	0.00	0.0	51.8	0.3	79.7
8.00	8.00	0.00	0.01	0.0	61.7	0.3	32.9
9.00	9.00	0.00	0.01	0.0	71.8	0.3	81.5
10.00	10.00	0.00	0.01	0.0	82.3	0.3	158.0
11.00	11.00	0.00	0.02	0.0	87.5	0.4	143.6
12.00	12.00	-0.00	0.02	0.0	99.1	0.2	192.6
13.00	13.00	-0.01	0.02	0.0	106.5	0.7	179.6
14.00	14.00	-0.01	0.03	0.0	110.1	0.3	150.3
15.00	15.00	-0.02	0.03	0.0	118.7	0.1	177.4
16.00	16.00	-0.02	0.03	0.0	123.3	0.5	161.0
17.00	17.00	-0.02	0.03	0.0	127.5	0.3	176.7
18.00	18.00	-0.03	0.03	0.0	132.5	0.4	182.4
19.00	19.00	-0.04	0.03	0.0	135.8	0.3	202.9
20.00	20.00	-0.04	0.04	0.1	138.3	0.4	166.5
21.00	21.00	-0.05	0.04	0.1	140.3	0.2	139.3
22.00	22.00	-0.05	0.04	0.1	142.5	0.4	217.8
23.00	23.00	-0.06	0.04	0.1	142.9	0.5	97.4
24.00	24.00	-0.06	0.05	0.1	143.8	0.8	144.2
25.00	25.00	-0.07	0.05	0.1	144.0	0.4	150.5
26.00	26.00	-0.07	0.05	0.1	143.2	0.2	217.7
27.00	27.00	-0.08	0.06	0.1	141.2	0.6	111.1
28.00	28.00	-0.08	0.07	0.1	138.8	0.6	80.8
29.00	29.00	-0.08	0.08	0.1	135.9	1.0	95.4
30.00	30.00	-0.08	0.09	0.1	131.9	0.7	85.8
31.00	31.00	-0.08	0.11	0.1	127.8	1.1	64.3
32.00	32.00	-0.08	0.12	0.1	123.5	1.3	81.9
33.00	33.00	-0.08	0.14	0.2	119.0	1.2	82.4
34.00	34.00	-0.07	0.16	0.2	113.9	1.1	59.8
35.00	35.00	-0.07	0.18	0.2	109.6	1.0	58.1
36.00	36.00	-0.06	0.21	0.2	105.0	1.8	73.1
37.00	37.00	-0.05	0.24	0.2	100.9	2.0	67.7
38.00	38.00	-0.03	0.27	0.3	97.2	2.2	70.5
39.00	39.00	-0.02	0.30	0.3	93.7	2.2	68.8
40.00	40.00	-0.01	0.34	0.3	90.9	2.2	73.0
41.00	40.99	0.01	0.38	0.4	88.8	2.6	71.9
42.00	41.99	0.02	0.41	0.4	86.8	1.7	62.2
43.00	42.99	0.04	0.46	0.5	85.5	2.5	70.0
44.00	43.99	0.05	0.50	0.5	84.4	2.7	76.0
45.00	44.99	0.06	0.54	0.5	83.3	2.9	77.2
46.00	45.99	0.08	0.59	0.6	82.3	2.5	83.5
47.00	46.99	0.09	0.63	0.6	81.7	3.3	71.8
48.00	47.99	0.11	0.69	0.7	81.1	3.1	74.8
49.00	48.98	0.12	0.74	0.8	80.7	3.0	66.5
50.00	49.98	0.14	0.80	0.8	80.1	3.6	68.4
51.00	50.98	0.16	0.85	0.9	79.5	3.5	76.7
52.00	51.98	0.18	0.92	0.9	78.9	3.9	69.4
53.00	52.98	0.20	0.98	1.0	78.3	3.9	71.2
54.00	53.97	0.23	1.05	1.1	77.8	4.0	55.3
55.00	54.97	0.25	1.12	1.1	77.4	4.6	69.4
56.00	55.97	0.28	1.19	1.2	76.9	4.7	77.6
57.00	56.96	0.30	1.27	1.3	76.6	4.6	96.7
58.00	57.96	0.32	1.34	1.4	76.4	5.1	54.3
59.00	58.96	0.35	1.43	1.5	76.1	5.8	78.5
60.00	59.95	0.39	1.52	1.6	75.7	5.4	68.7
61.00	60.95	0.42	1.60	1.7	75.3	5.1	67.5
62.00	61.94	0.46	1.68	1.7	74.9	5.3	63.9
63.00	62.94	0.49	1.77	1.8	74.6	5.8	62.0
64.00	63.94	0.52	1.86	1.9	74.3	5.4	71.2
65.00	64.93	0.56	1.95	2.0	74.0	5.8	68.8
66.00	65.93	0.60	2.05	2.1	73.8	5.9	64.2
67.00	66.92	0.63	2.14	2.2	73.6	5.7	70.0
68.00	67.92	0.67	2.23	2.3	73.4	5.6	67.9
69.00	68.91	0.70	2.32	2.4	73.1	5.7	68.1
70.00	69.91	0.74	2.41	2.5	72.9	5.5	74.4
71.00	70.90	0.77	2.51	2.6	72.9	5.5	79.0
72.00	71.90	0.80	2.60	2.7	72.9	5.7	72.2
73.00	72.89	0.83	2.70	2.8	72.9	5.9	67.7
74.00	73.89	0.87	2.79	2.9	72.8	5.9	72.0
75.00	74.88	0.90	2.90	3.0	72.8	6.8	66.0
76.00	75.87	0.93	3.00	3.1	72.7	5.6	85.3
77.00	76.87	0.97	3.10	3.2	72.7	6.2	65.6
78.00	77.86	1.00	3.21	3.4	72.7	6.6	72.3
79.00	78.85	1.05	3.32	3.5	72.5	6.8	67.5
80.00	79.85	1.09	3.43	3.6	72.3	6.6	67.6
81.00	80.84	1.13	3.54	3.7	72.2	6.5	69.1
82.00	81.83	1.19	3.65	3.8	71.9	7.1	68.6
83.00	82.82	1.24	3.76	4.0	71.8	7.1	71.2
84.00	83.82	1.29	3.87	4.1	71.6	7.1	67.1
85.00	84.81	1.34	3.99	4.2	71.5	6.9	55.5
86.00	85.80	1.38	4.10	4.3	71.4	6.8	64.5
87.00	86.79	1.42	4.22	4.5	71.4	6.7	65.9
88.00	87.79	1.48	4.33	4.6	71.2	7.2	55.6
89.00	88.78	1.53	4.45	4.7	71.0	7.3	67.6
90.00	89.77	1.58	4.56	4.8	70.9	7.2	65.3
91.00	90.76	1.63	4.68	5.0	70.8	7.6	51.7
92.00	91.75	1.67	4.80	5.1	70.8	7.5	67.3
93.00	92.74	1.73	4.91	5.2	70.7	7.4	65.1
94.00	93.74	1.78	5.03	5.3	70.6	7.6	68.6
95.00	94.73	1.83	5.15	5.5	70.5	7.2	69.0
96.00	95.72	1.88	5.27	5.6	70.4	7.7	66.4
97.00	96.71	1.93	5.39	5.7	70.3	7.4	66.9
98.00	97.70	1.99	5.51	5.9	70.2	7.5	62.6
99.00	98.69	2.05	5.63	6.0	70.0	7.3	67.2
100.00	99.68	2.10	5.75	6.1	69.9	7.5	66.2
101.00	100.67	2.16	5.87	6.3	69.8	7.5	65.2
102.00	101.67	2.21	5.99	6.4	69.8	7.3	68.3
103.00	102.66	2.25	6.11	6.5	69.7	6.9	60.3
104.00	103.65	2.30	6.22	6.6	69.7	6.3	66.8
105.00	104.64	2.36	6.32	6.7	69.6	6.7	65.0
106.00	105.64	2.41	6.43	6.9	69.5	6.6	65.2
107.00	106.63	2.46	6.53	7.0	69.4	6.6	63.9
108.00	107.62	2.50	6.64	7.1	69.3	6.6	66.0
109.00	108.62	2.55	6.74	7.2	69.3	6.4	63.2
110.00	109.61	2.60	6.84	7.3	69.2	6.1	75.1
111.00	110.60	2.64	6.94	7.4	69.2	6.4	65.7
112.00	111.60	2.69	7.05	7.5	69.1	6.1	66.9
113.00	112.59	2.73	7.15	7.7	69.1	6.0	60.6
114.00	113.59	2.77	7.26	7.8	69.1	6.8	69.5
115.00	114.58	2.82	7.37	7.9	69.1	7.3	69.8
116.00	115.57	2.86	7.49	8.0	69.1	7.0	61.7
117.00	116.56	2.91	7.60	8.1	69.0	7.0	65.2
118.00	117.55	2.96	7.71	8.3	69.0	6.9	75.1
119.00	118.55	3.01	7.83	8.4	69.0	7.1	68.7
120.00	119.54	3.06	7.95	8.5	68.9	7.4	66.9
121.00	120.53	3.11	8.06	8.6	68.9	7.3	66.0
122.00	121.52	3.16	8.18	8.8	68.9	7.8	68.7
123.00	122.51	3.21	8.31	8.9	68.9	7.6	67.5
124.00	123.50	3.26	8.43	9.0	68.9	7.8	65.1
125.00	124.49	3.30	8.56	9.2	68.9	7.6	70.4
126.00	125.49	3.35	8.68	9.3	68.9	7.7	66.9
127.00	126.48	3.40	8.81	9.4	68.9	7.6	69.7
128.00	127.47	3.44	8.93	9.6	68.9	7.6	67.1
129.00	128.46	3.49	9.05	9.7	68.9	7.2	69.3
130.00	129.45	3.54	9.17	9.8	68.9	6.8	64.3
131.00	130.44	3.58	9.28	10.0	68.9	6.3	77.0
132.00	131.44	3.62	9.41	10.1	69.0	7.5	68.2
133.00	132.43	3.66	9.53	10.2	69.0	7.6	71.0
134.00	133.42	3.70	9.66	10.3	69.0	7.4	65.2
135.00	134.41	3.74	9.79	10.5	69.1	8.1	75.3
136.00	135.40	3.79	9.92	10.6	69.1	8.0	72.5
137.00	136.39	3.83	10.05	10.8	69.1	8.1	65.7
138.00	137.38	3.88	10.19	10.9	69.2	8.5	68.7
139.00	138.37	3.92	10.33	11.0	69.2	8.2	69.7
139.40	138.72	3.94	10.37	11.1	69.2	8.2	71.2

Century
WIRELINE SERVICES

GAMMA - NEUTRON
THROUGH RODS
CM12-28

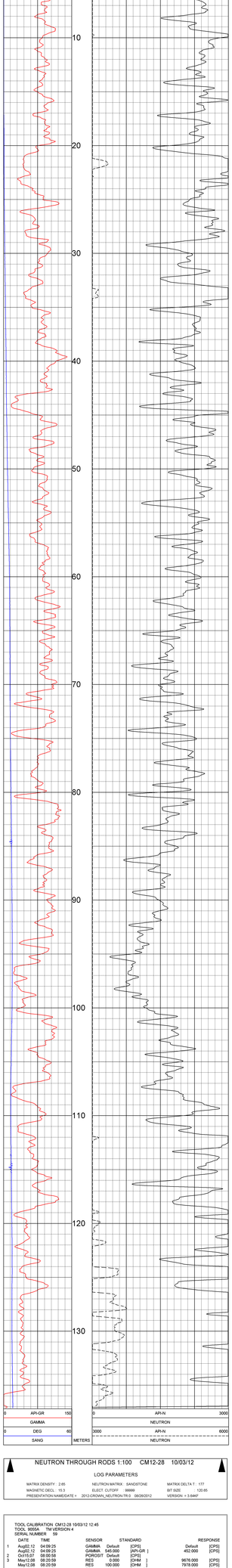
COMPANY: CENTURY WIRELINE SERVICES
WELL: CM12-28
FIELD: NA
COUNTY: NA
STATE: NA
COUNTRY: CANADA
API #: NA
LOCATION: NA
OTHER SERVICES: NA
PERMANENT DATUM: GROUND LEVEL
ELEVATION: NA
LOG MEASURED FROM: NA
DRILLING MEASURED FROM: NA
ELEVATION: NA
DATE: 10/03/12
RUN NO.: ONE
DEPTH DRILLER: 0
DEPTH LOGGER: 0
BOTTOM LOGGED INTERVAL: 0
TOP LOGGED INTERVAL: 0
CASING DRILLER: 0 @ 0
CASING LOGGER: 0 @ 0
BIT SIZE: 0
TYPE FLUID IN HOLE: NA
DENSITY / VISCOSITY: NA
PH / FLUID LOSS: NA
SOURCE OF SAMPLE: NA
RM @ MEAS TEMP: NA
RMF @ MEAS TEMP: NA
RMC @ MEAS TEMP: NA
SOURCE: RMF / RMC: NA
RM @ BHT: NA
TIME SINCE CIRC: NA
MAX REC TEMP: NA
EQUIP LOCATION: NA
RECORDED BY: NA
WITNESSED BY: NA

THE CORRECTION HEREON ARE SUBJECT TO ACCEPTANCE THROUGH GOOD PRACTICE

NEUTRON THROUGH RODS 1:100 CM12-28 10/03/12

LOG PARAMETERS

MATRIX DENSITY 2.65	NEUTRON MATRIX SANDSTONE	MATRIX DELTA T 177	
MAGNETIC DECL 15.3	ELECT CUTOFF 99999	BIT SIZE 130.65	
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR 0 06/29/2012		VERSION = 3.64KF	



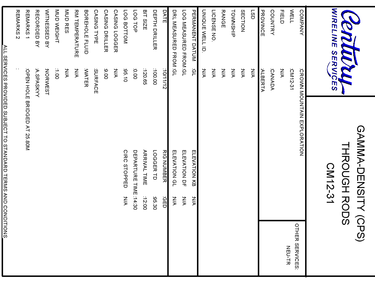
NEUTRON THROUGH RODS 1:100 CM12-28 10/03/12

LOG PARAMETERS

MATRIX DENSITY 2.65	NEUTRON MATRIX SANDSTONE	MATRIX DELTA T 177	
MAGNETIC DECL 15.3	ELECT CUTOFF 99999	BIT SIZE 130.65	
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR 0 06/29/2012		VERSION = 3.64KF	

TOOL CALIBRATION CM12-28 10/03/12 12:46
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

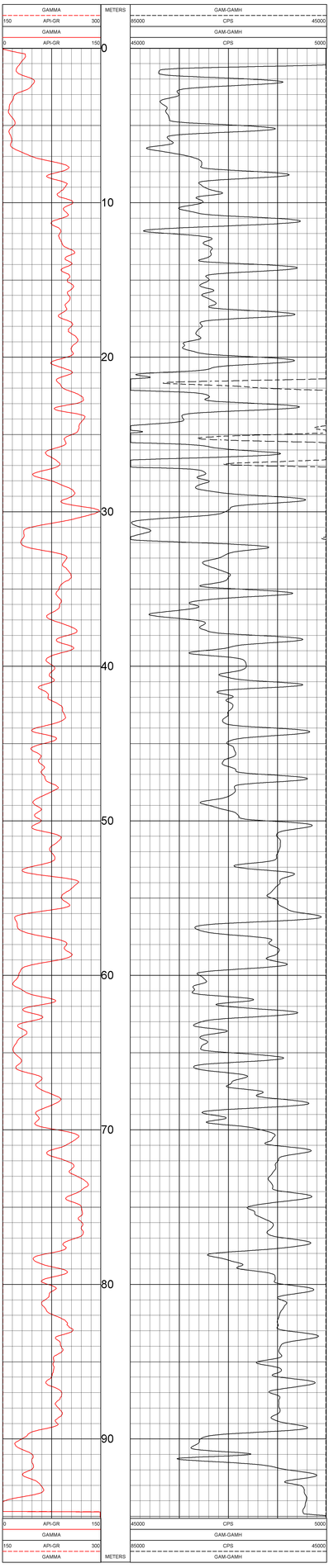
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02.12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Oct15.07	08:00:58	GAMMA	Default	[API GR]	452.000	[CPS]
2	Oct15.07	08:00:58	PORSDIT	Default	[CPS]		
3	May12.08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12.08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12.08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12.08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04.09	10:40:49	NEUTPOR	0.000	[API-N]	1.000	[CPS]
	Dec04.09	10:40:49	NEUTREC	271.000	[API-N]	95.000	[CPS]
6	Oct15.07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15.07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]



DENSITY THROUGH RODS 1:100 CM12-31 10/11/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-TR 0 09/03/2012 VERSION = 3.64KF



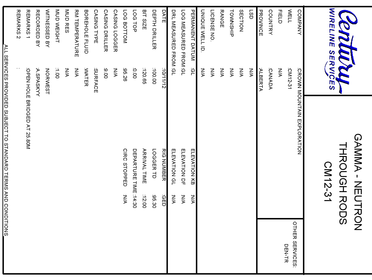
DENSITY THROUGH RODS 1:100 CM12-31 10/11/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3 ELECT. CUTOFF : 99999 BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-TR 0 09/03/2012 VERSION = 3.64KF

TOOL CALIBRATION CM12-31 10/11/12 12:19
TOOL 9066A TM VERSION 1
SERIAL NUMBER 643

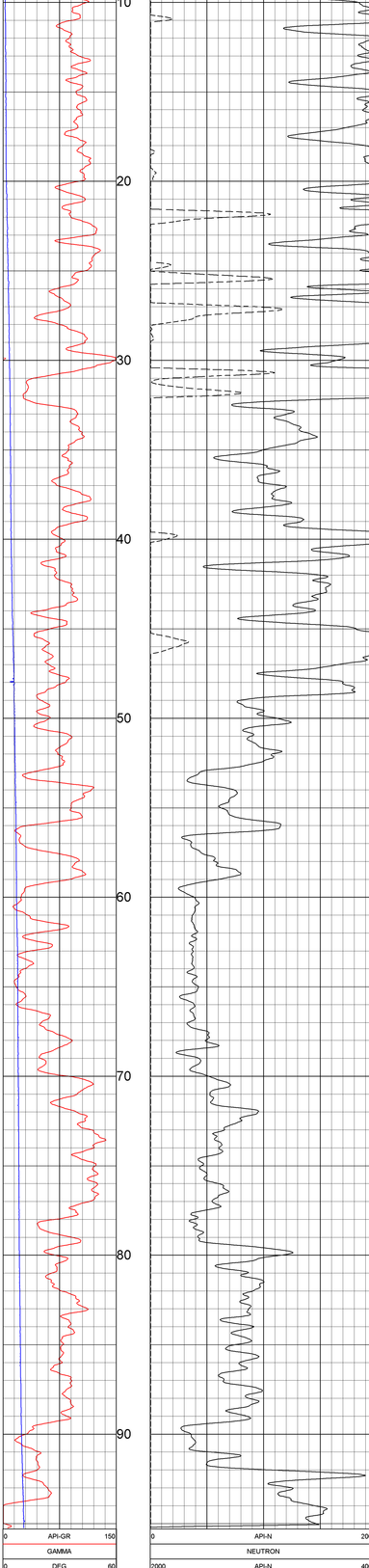
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug26,12	07:52:32	GAMMA	Default	[CPS]	Default	[CPS]
	Aug26,12	07:52:32	GAMMA	545.000	[API-GR]	195.000	[CPS]



NEUTRON THROUGH RODS 1:100 CM12-31 10/11/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE =	2012-CROWN_NEUTRON-TR 0 08/26/2012	VERSION = 3.64KF



NEUTRON THROUGH RODS 1:100 CM12-31 10/11/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE =	2012-CROWN_NEUTRON-TR 0 08/26/2012	VERSION = 3.64KF

TOOL CALIBRATION CM12-31 10/11/12 12:44
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	POROSIT	Default	[CPS]		
3	May12,08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12,08	08:20:52	SP	392.000	[MV]	3462.000	[CPS]
5	Dec04,09	10:40:49	NEUTRON	0.000	[API-N]	1.000	[CPS]
	Dec04,09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-33B

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-33B
FIELD	:ALEXANDER WEST
COUNTRY	:CANADA
PROVINCE	:BRITISH COLUMBIA

OTHER SERVICES:
9068SD
9055NEU
9055DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:11/18/12	RIG NUMBER	:GED
DEPTH DRILLER	:123	LOGGER TD	:122.84
BIT SIZE	:120.65	ARRIVAL TIME	:06:30
LOG TOP	:0.18	DEPARTURE TIME	:13:00
LOG BOTTOM	:122.84	CIRC STOPPED	:07:00
CASING LOGGER	:5.8		
CASING DRILLER	:6		
CASING TYPE	:STEEL		
BOREHOLE FLUID	:H2O		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:M.ESTRICK		
RECORDED BY	:J.GRESCHUK		
REMARKS 1	:70 DEGREE AZIMUTH		
REMARKS 2	:60 DEGREE DIP		

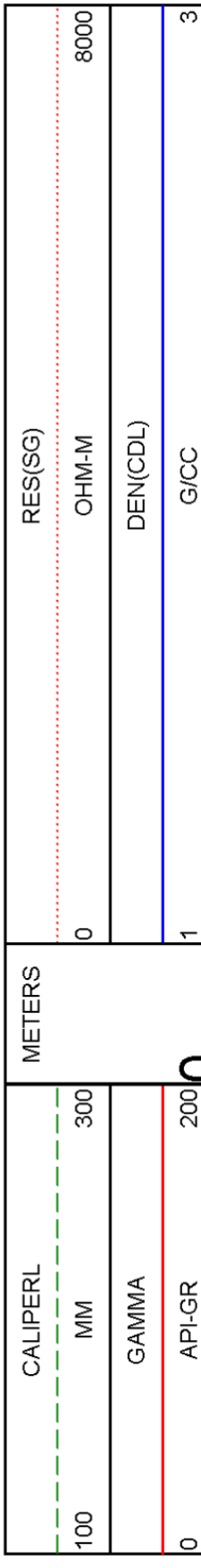
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

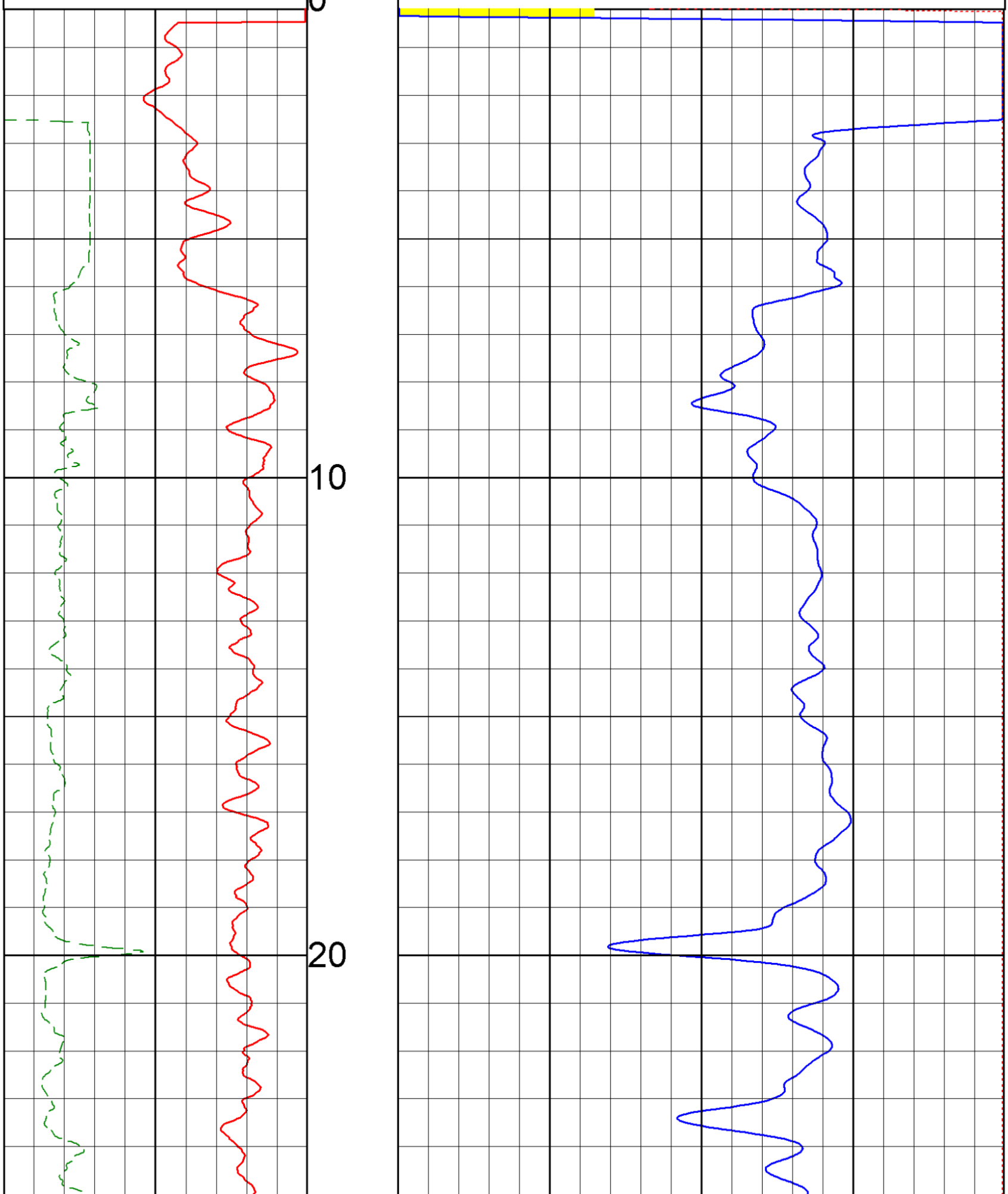
BULK DENSITY 1:100 CM12-33B 11/18/12

LOG PARAMETERS

MATRIX DENSITY :	2.65	NEUTRON MATRIX :	SANDSTONE
MAGNETIC DECL :	15.3	ELECT. CUTOFF :	75000
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-RES.0 11/16/2012		

MATRIX DELTA T :	177
BIT SIZE :	120.65
VERSION =	3.64KG

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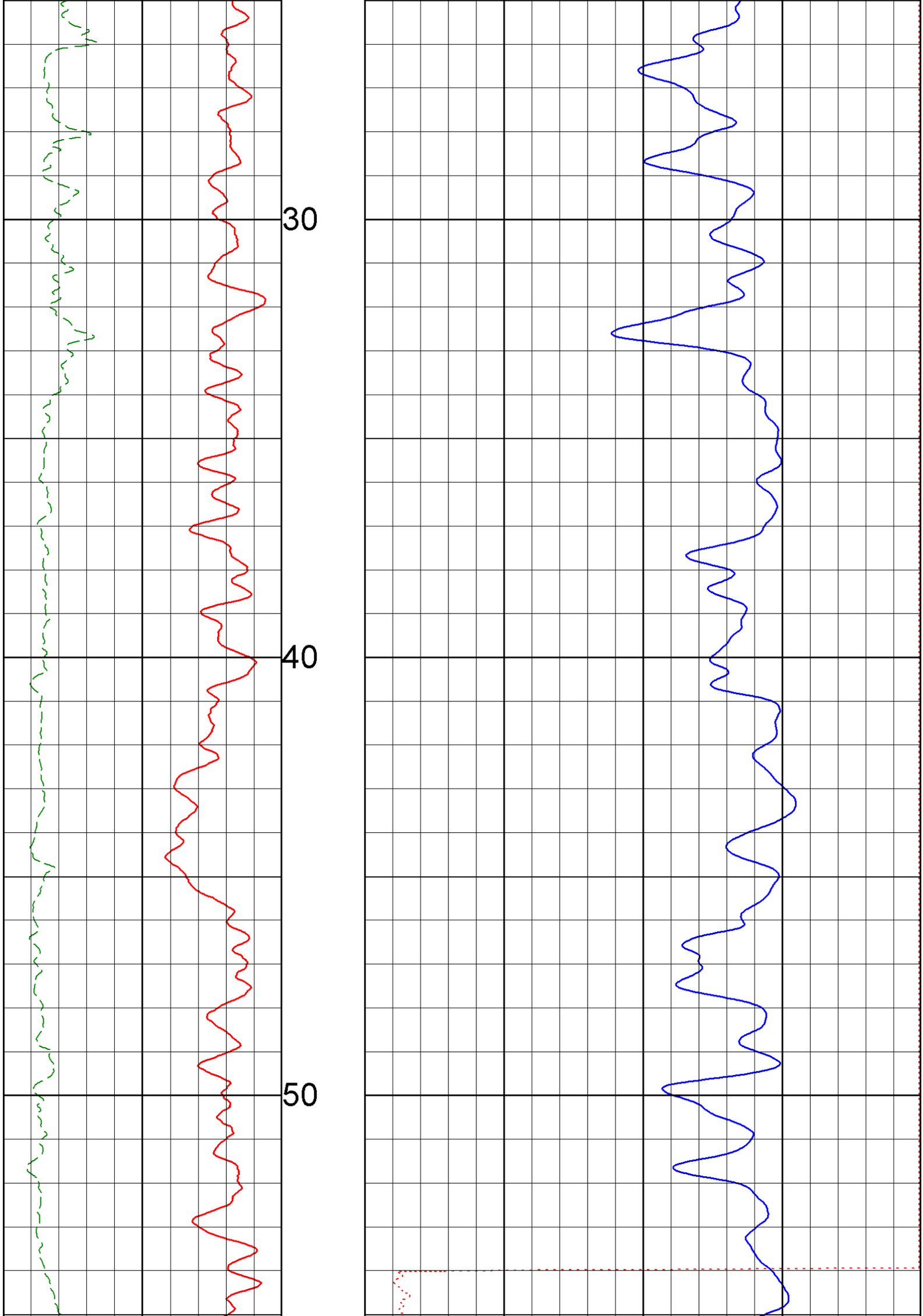
10
20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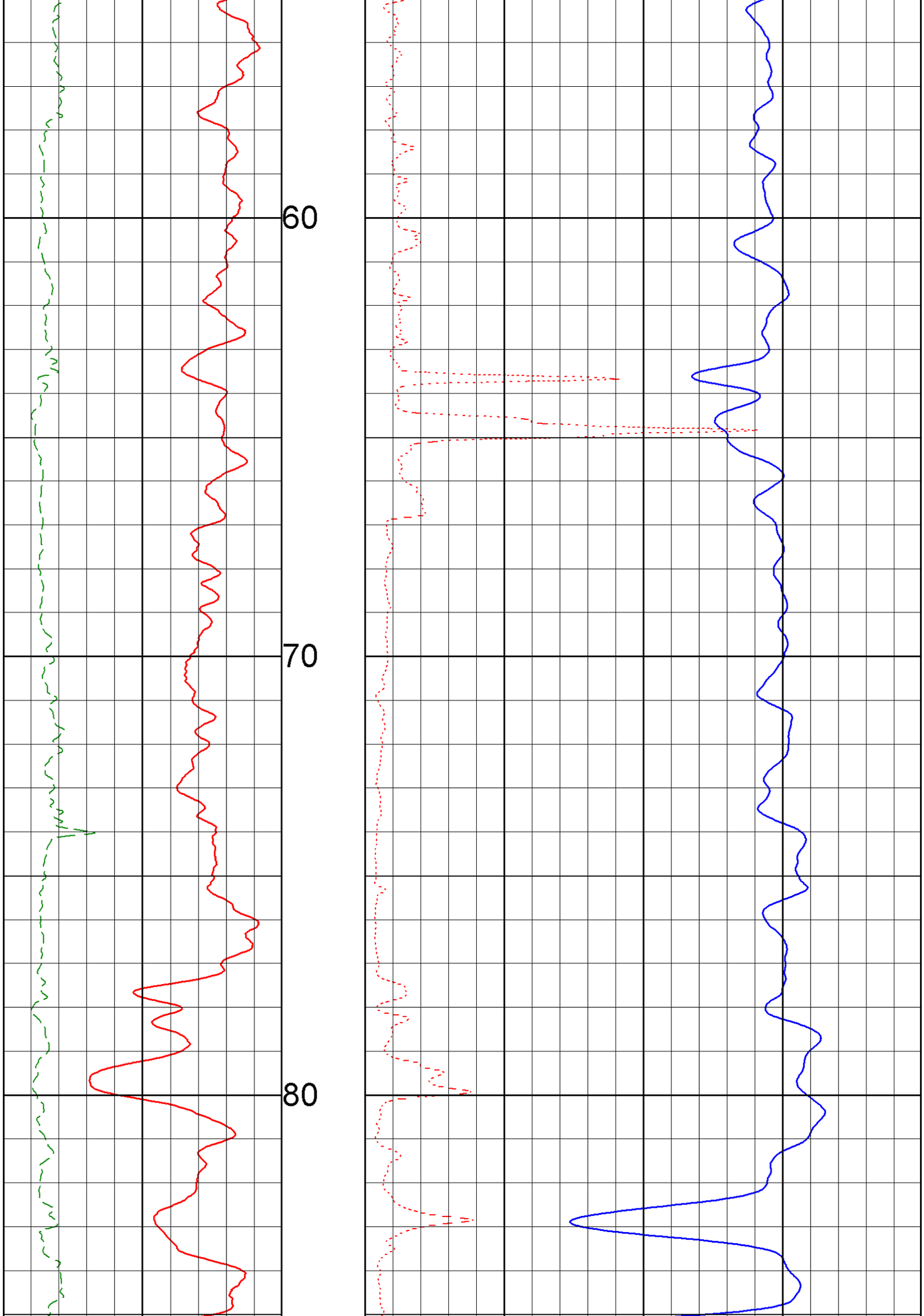
40
50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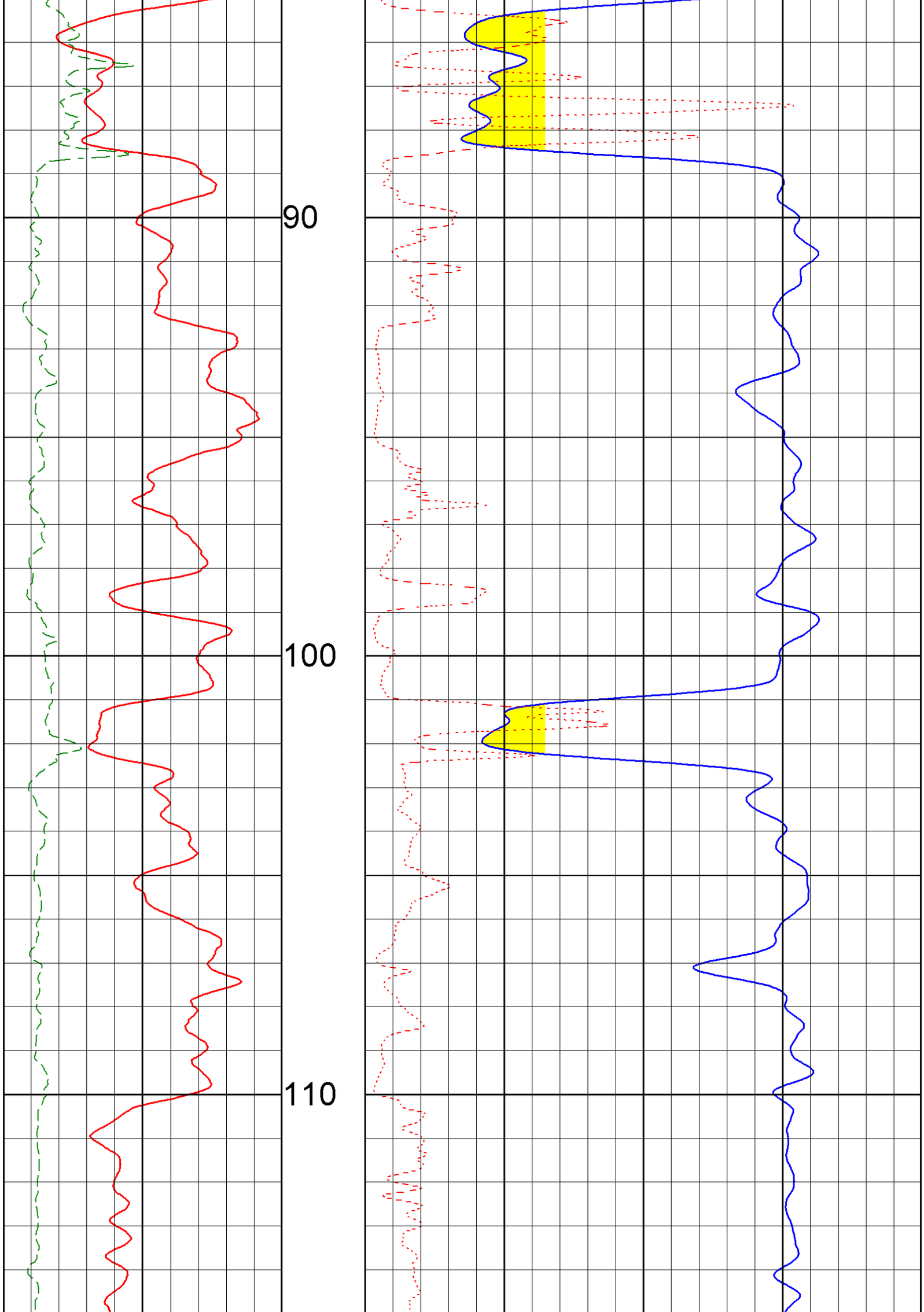
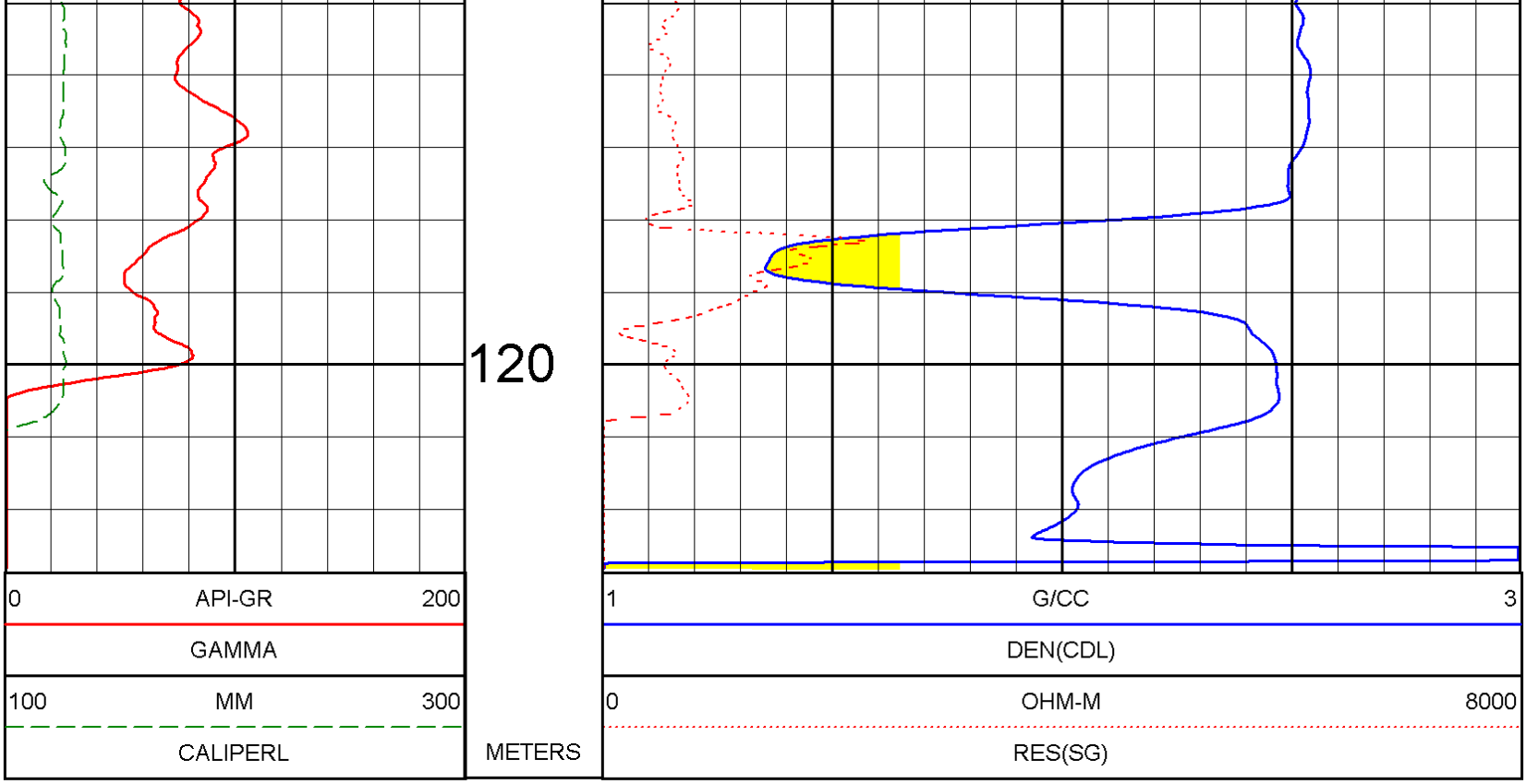
70
80


90
100
110



BULK DENSITY 1:100 CM12-33B 11/18/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 75000	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 11/16/2012		VERSION = 3.64KG

TOOL CALIBRATION CM12-33B 11/18/12 11:17
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

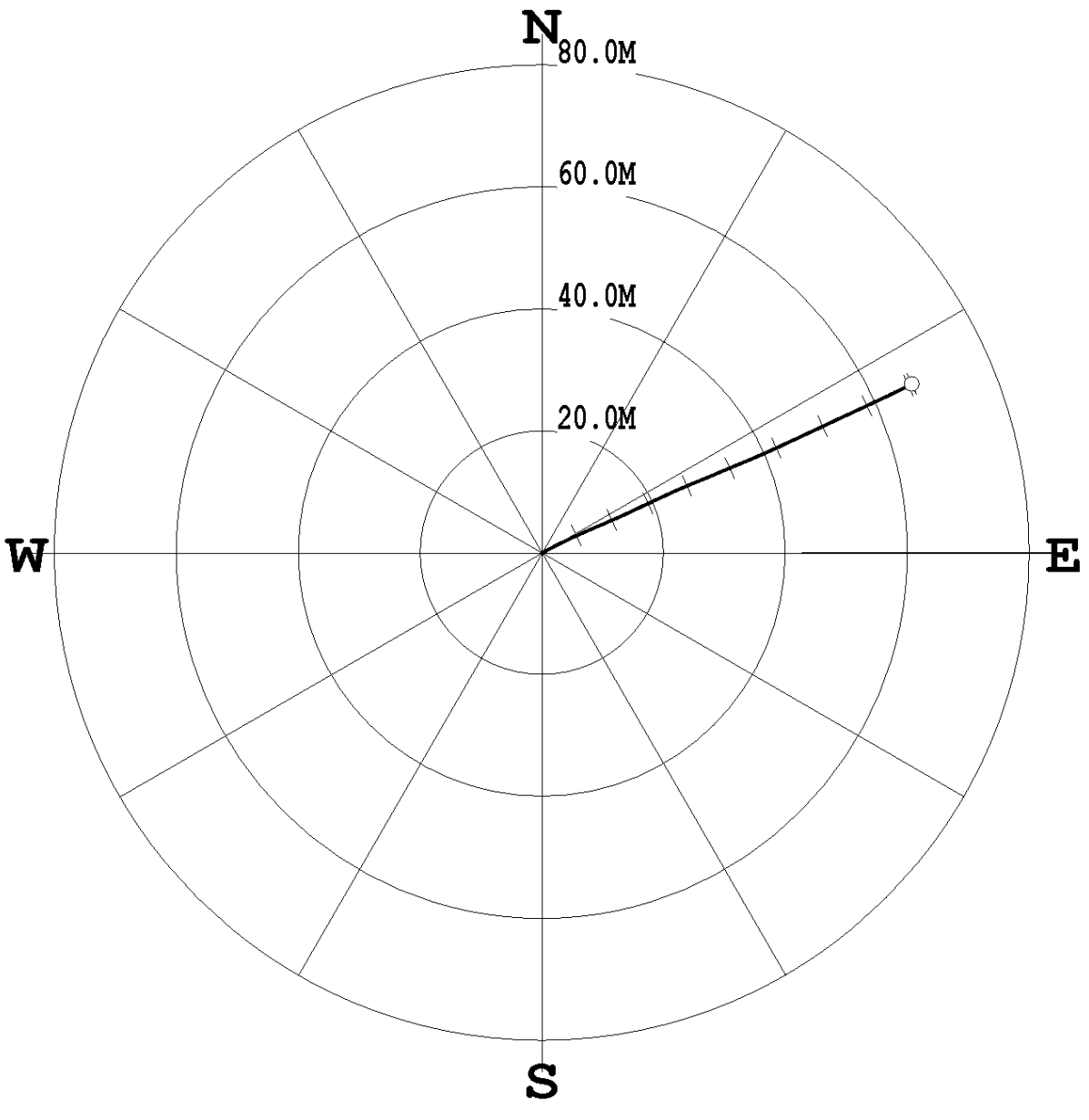
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: ALEXANDER WEST
HOLE ID: CM12-33B
DATE OF LOG: 11/18/12
PROBE: 9055A 59

MAG DECL: 15.3

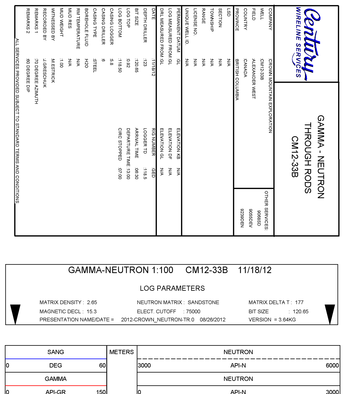
SCALE: 10 M/CM
TRUE DEPTH: 100.81 M
AZIMUTH: 65.5
DISTANCE: 66.6 M
+ = 10 M INCR
○ = BOTTOM OF HOLE

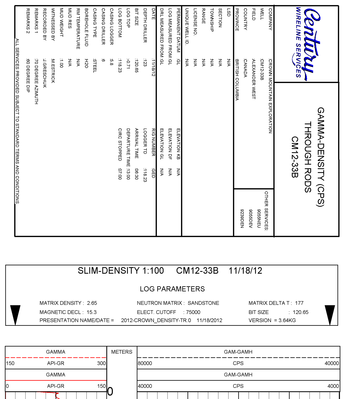


* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY
DATA FROM : N/A
MAG. DECL. : 15.300
HOLE ID. : CM12-33B
DATE OF LOG : 11/18/12
PROBE : 9055A , 59
DEPTH UNITS : METERS
LOG: CM12-33B_11-18-12_10-44_9055A_.02_10.00_122.84_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
10.02	10.02	0.01	0.01	0.0	58.6	31.9	58.6
11.00	10.85	0.26	0.46	0.5	60.5	31.4	63.3
12.00	11.69	0.52	0.93	1.1	60.6	32.2	60.9
13.00	12.54	0.77	1.40	1.6	61.1	32.2	62.5
14.00	13.39	1.02	1.87	2.1	61.5	32.1	63.6
15.00	14.23	1.26	2.35	2.7	61.7	32.1	61.3
16.00	15.08	1.50	2.82	3.2	62.0	31.1	65.5
17.00	15.92	1.74	3.30	3.7	62.2	32.5	62.5
18.00	16.77	1.97	3.78	4.3	62.5	32.4	61.0
19.00	17.61	2.20	4.26	4.8	62.7	32.2	64.5
20.00	18.46	2.42	4.74	5.3	62.9	32.5	65.1
21.00	19.31	2.65	5.22	5.9	63.1	32.0	66.6
22.00	20.15	2.87	5.71	6.4	63.3	32.8	65.6
23.00	21.00	3.08	6.20	6.9	63.6	32.6	65.7
24.00	21.84	3.30	6.69	7.5	63.7	32.3	66.1
25.00	22.68	3.53	7.18	8.0	63.8	31.6	68.1
26.00	23.53	3.74	7.67	8.5	64.0	32.5	66.2
27.00	24.37	3.95	8.16	9.1	64.2	30.9	71.8
28.00	25.22	4.16	8.65	9.6	64.3	32.5	66.3
29.00	26.06	4.37	9.15	10.1	64.5	32.8	69.8
30.00	26.91	4.58	9.64	10.7	64.6	31.6	69.7
31.00	27.75	4.79	10.13	11.2	64.7	31.9	70.5
32.00	28.59	5.00	10.63	11.7	64.8	32.3	65.6
33.00	29.44	5.24	11.11	12.3	64.8	33.2	66.2
34.00	30.28	5.45	11.60	12.8	64.8	33.3	64.9
35.00	31.12	5.66	12.10	13.4	64.9	32.8	66.2
36.00	31.96	5.88	12.59	13.9	65.0	32.3	67.6
37.00	32.81	6.10	13.08	14.4	65.0	33.1	64.6
38.00	33.65	6.32	13.57	15.0	65.0	32.8	65.8
39.00	34.49	6.54	14.07	15.5	65.0	33.3	65.5
40.00	35.33	6.77	14.55	16.0	65.0	28.4	61.9
41.00	36.17	7.01	15.04	16.6	65.0	33.6	65.6
42.00	37.00	7.24	15.54	17.1	65.0	33.8	63.4
43.00	37.84	7.48	16.04	17.7	65.0	33.8	66.1
44.00	38.67	7.71	16.55	18.3	65.0	33.7	67.4
45.00	39.49	7.94	17.06	18.8	65.0	34.0	65.0
46.00	40.32	8.18	17.57	19.4	65.0	34.5	65.7
47.00	41.14	8.44	18.07	19.9	65.0	35.1	66.1
48.00	41.97	8.68	18.58	20.5	65.0	33.8	69.4
49.00	42.79	8.91	19.10	21.1	65.0	34.6	65.8
50.00	43.61	9.14	19.62	21.6	65.0	35.6	62.2
51.00	44.43	9.39	20.14	22.2	65.0	35.7	62.0
52.00	45.25	9.63	20.66	22.8	65.0	34.7	65.8
53.00	46.07	9.88	21.18	23.4	65.0	35.1	65.1
54.00	46.88	10.11	21.70	23.9	65.0	35.2	65.4
55.00	47.70	10.34	22.23	24.5	65.1	35.9	66.2
56.00	48.51	10.58	22.77	25.1	65.1	35.6	66.9
57.00	49.32	10.80	23.31	25.7	65.1	35.4	67.1
58.00	50.14	11.03	23.84	26.3	65.2	34.3	70.1
59.00	50.95	11.26	24.38	26.9	65.2	36.2	65.4
60.00	51.76	11.48	24.92	27.4	65.3	37.4	64.8
61.00	52.57	11.69	25.46	28.0	65.3	36.9	66.8
62.00	53.37	11.93	26.01	28.6	65.4	37.8	64.1
63.00	54.18	12.15	26.56	29.2	65.4	37.1	67.8
64.00	54.98	12.38	27.12	29.8	65.5	37.6	67.2
65.00	55.77	12.60	27.68	30.4	65.5	36.9	68.2
66.00	56.56	12.85	28.24	31.0	65.5	36.4	69.3
67.00	57.36	13.09	28.80	31.6	65.6	36.8	59.5
68.00	58.14	13.34	29.36	32.2	65.6	38.2	68.5
69.00	58.92	13.57	29.94	32.9	65.6	39.0	70.2
70.00	59.70	13.81	30.53	33.5	65.7	39.5	67.9
71.00	60.47	14.06	31.11	34.1	65.7	40.0	67.6
72.00	61.24	14.31	31.70	34.8	65.7	39.2	68.0
73.00	62.01	14.55	32.29	35.4	65.7	38.7	67.1
74.00	62.78	14.80	32.87	36.0	65.8	39.2	67.6
75.00	63.56	15.03	33.46	36.7	65.8	39.3	64.5
76.00	64.33	15.29	34.04	37.3	65.8	38.9	68.7
77.00	65.11	15.53	34.62	37.9	65.8	38.8	69.4
78.00	65.88	15.78	35.20	38.6	65.8	38.5	64.7
79.00	66.65	16.03	35.79	39.2	65.9	38.7	61.3
80.00	67.40	16.29	36.38	39.9	65.9	40.5	64.3
81.00	68.16	16.55	36.98	40.5	65.9	40.7	64.9
82.00	68.93	16.83	37.57	41.2	65.9	40.6	64.8
83.00	69.69	17.09	38.16	41.8	65.9	40.5	67.6
84.00	70.45	17.36	38.75	42.5	65.9	40.6	64.8
85.00	71.21	17.64	39.33	43.1	65.8	40.2	64.9
86.00	71.97	17.91	39.92	43.8	65.8	39.6	67.3
87.00	72.74	18.19	40.50	44.4	65.8	40.1	64.0
88.00	73.50	18.45	41.09	45.0	65.8	38.4	65.6
89.00	74.27	18.72	41.67	45.7	65.8	39.8	64.2
90.00	75.03	18.99	42.26	46.3	65.8	41.8	68.1
91.00	75.80	19.28	42.83	47.0	65.8	40.3	65.1
92.00	76.57	19.54	43.41	47.6	65.8	40.0	65.3
93.00	77.33	19.80	44.00	48.2	65.8	40.1	65.6
94.00	78.10	20.08	44.57	48.9	65.8	39.9	65.5
95.00	78.87	20.34	45.15	49.5	65.7	40.0	66.0
96.00	79.64	20.63	45.72	50.2	65.7	39.9	65.5
97.00	80.41	20.89	46.31	50.8	65.7	39.9	66.3
98.00	81.18	21.16	46.88	51.4	65.7	39.4	65.2
99.00	81.96	21.43	47.45	52.1	65.7	39.2	65.2
100.00	82.73	21.70	48.02	52.7	65.7	38.7	59.4
101.00	83.51	21.97	48.59	53.3	65.7	39.1	63.9
102.00	84.29	22.24	49.16	54.0	65.7	38.9	65.9
103.00	85.07	22.49	49.73	54.6	65.7	38.6	65.4
104.00	85.85	22.74	50.30	55.2	65.7	38.9	62.0
105.00	86.63	23.01	50.86	55.8	65.7	38.2	63.0
106.00	87.42	23.28	51.42	56.4	65.6	38.4	64.4
107.00	88.20	23.54	51.98	57.1	65.6	38.2	65.7
108.00	88.99	23.80	52.54	57.7	65.6	39.1	58.1
109.00	89.78	24.05	53.09	58.3	65.6	38.0	66.3
110.00	90.57	24.31	53.65	58.9	65.6	37.6	63.4
111.00	91.36	24.57	54.20	59.5	65.6	37.8	65.0
112.00	92.15	24.84	54.76	60.1	65.6	37.5	65.3
113.00	92.95	25.09	55.31	60.7	65.6	37.2	65.5
114.00	93.74	25.36	55.85	61.3	65.6	36.5	60.5
115.00	94.55	25.60	56.39	61.9	65.6	37.5	66.1
116.00	95.34	25.86	56.94	62.5	65.6	37.2	62.4
117.00	96.14	26.13	57.48	63.1	65.6	37.5	63.8
118.00	96.93	26.40	58.02	63.7	65.5	37.0	65.3
119.00	97.73	26.65	58.56	64.3	65.5	36.9	61.6
120.00	98.54	26.91	59.10	64.9	65.5	36.4	65.9
121.00	99.34	27.16	59.64	65.5	65.5	39.4	55.3
122.00	100.13	27.43	60.18	66.1	65.5	37.2	61.6
122.84	100.77	27.64	60.62	66.6	65.5	36.6	64.6


GAMMA - NEUTRON
THRU CASINGS
CM12-33B
Century WIRELINE SERVICES
COMPANY
WELL
FIELD
COUNTY
STATE
LOCATION
SECTION
TOWNSHIP
RANGE
PERMANENT DATUM
ELEV.
LOG MEASURED FROM
DRILL MEASURED FROM
ELEVATION
K.B.
D.F.
G.L.
DATE
RUN NO.
DEPTH-DRILLER
DEPTH-LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING-DRILLER
CASING-LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENS.
VISC.
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
RUN NO.
TYPE LOG
DEPTH-DRILLER
DEPTH-LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING-DRILLER
CASING-LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENS.
VISC.
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
NEUTRON TOOL
GAMMA RAY
CASING COLLAR LOCATOR
TYPE
SERIAL NO.
TYPE
SERIAL NO.
TYPE
SERIAL NO.


Gamma
WIRELINE SERVICES
GAMMA-DENSITY (CPS)
THROUGH RODS
CM12-33B
COMPANY
WELL
FIELD
COUNTY
STATE
API NUMBER
OTHER SERVICES
SECTION
TOWNSHIP
RANGE
PERMANENT DATUM
ELEV.
LOG MEASURED FROM
DRILLING MEASURED FROM
DATE
RUN NO.
TYPE LOG
DEPTH DRILLER
DEPTH LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING DRILLER
CASING LOGGER
BIT SIZE
TYPE FLUID
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS TEMP
RMF @ MEAS TEMP
RMC @ MEAS TEMP
SOURCE RMF
SOURCE RMC
RM @ BHT
TIME CIRC
MAX REC TEMP
EQUIP. LOCATION
RECORDED BY
WITNESSED BY
RUN
TYPE
FROM
TO
BIT
SIZE
WEIGHT
GRADE
THREAD
CASING
TYPE
SIZE
WEIGHT
GRADE
THREAD
TOP
BOTTOM
TYPE
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE
RM @ MEAS TEMP

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-34A

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-34A
FIELD	:N/A
COUNTRY	:CANADA
PROVINCE	:ALBERTA

OTHER SERVICES:
DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:10/14/12	RIG NUMBER	:GED
DEPTH DRILLER	:118.00	LOGGER TD	:116.30
BIT SIZE	:120.65	ARRIVAL TIME	:02:00
LOG TOP	:0.00	DEPARTURE TIME	:04:30
LOG BOTTOM	:115.78	CIRC STOPPED	:N/A
CASING LOGGER	:9.40		
CASING DRILLER	:9.00		
CASING TYPE	:SURFACE		
BOREHOLE FLUID	:WATER		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:NORWEST		
RECORDED BY	:A.SPASKYY		
REMARKS 1	:		
REMARKS 2	:		

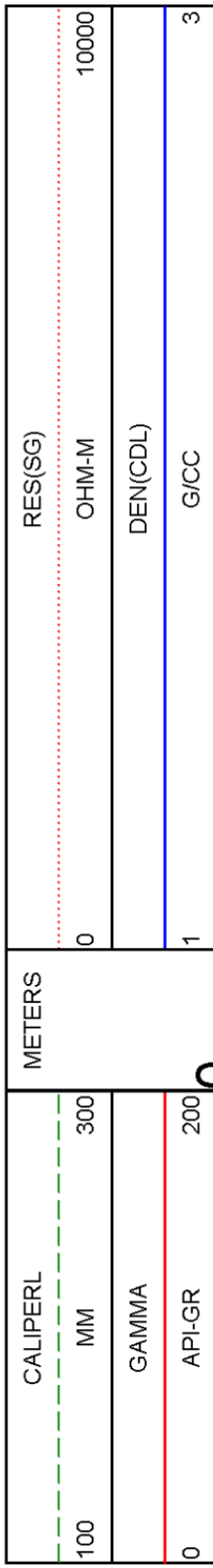
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

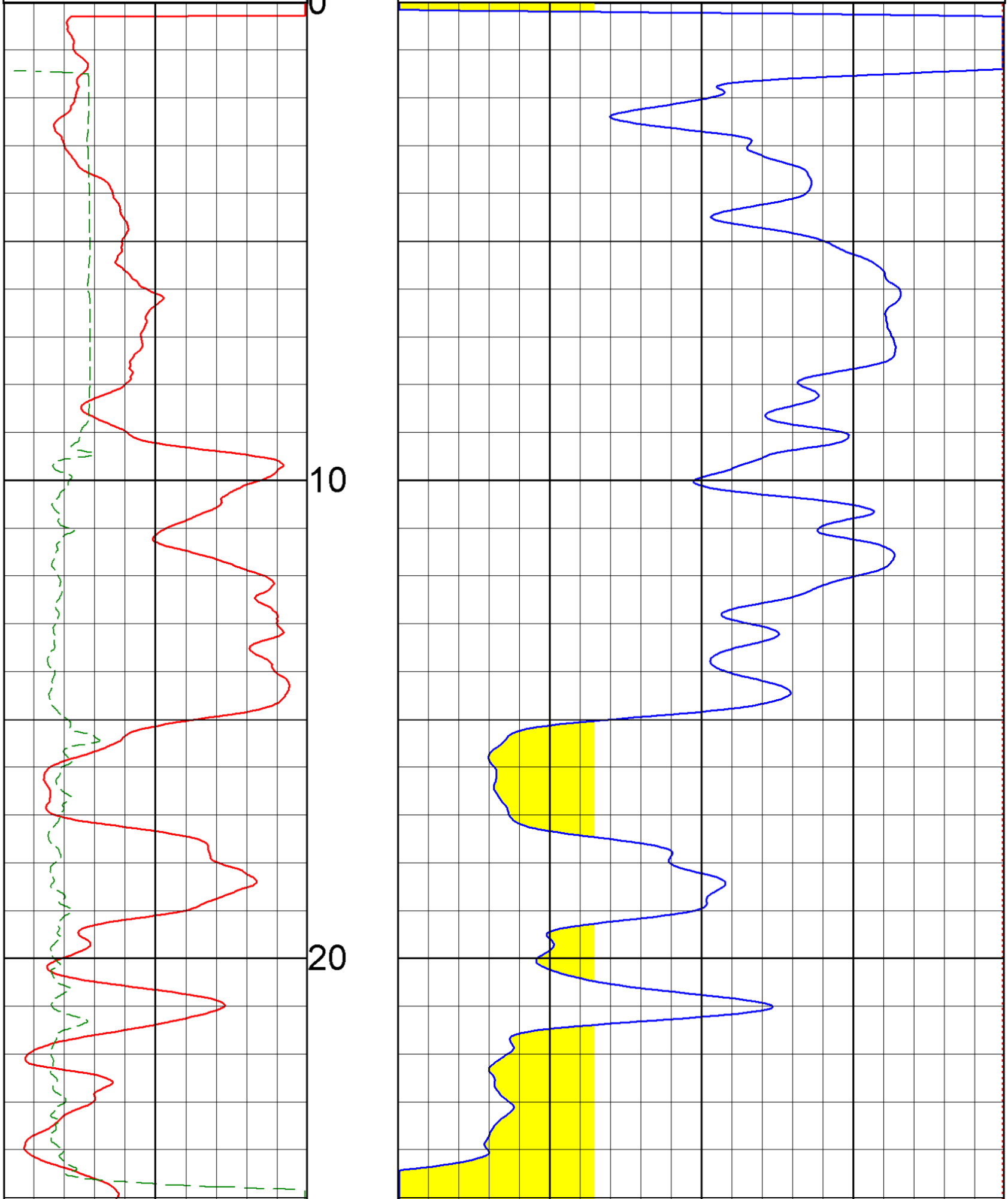
DENSITY 1:100 CM12-34A 10/14/12

LOG PARAMETERS

MATRIX DENSITY :	2.65	NEUTRON MATRIX :	SANDSTONE
MAGNETIC DECL :	15.3	ELECT. CUTOFF	: 99999
PRESENTATION NAME/DATE =	2012-CROWN_DENSITY-RES.0 08/21/2012		

MATRIX DELTA T :	177
BIT SIZE	: 120.65
VERSION	= 3.64KF

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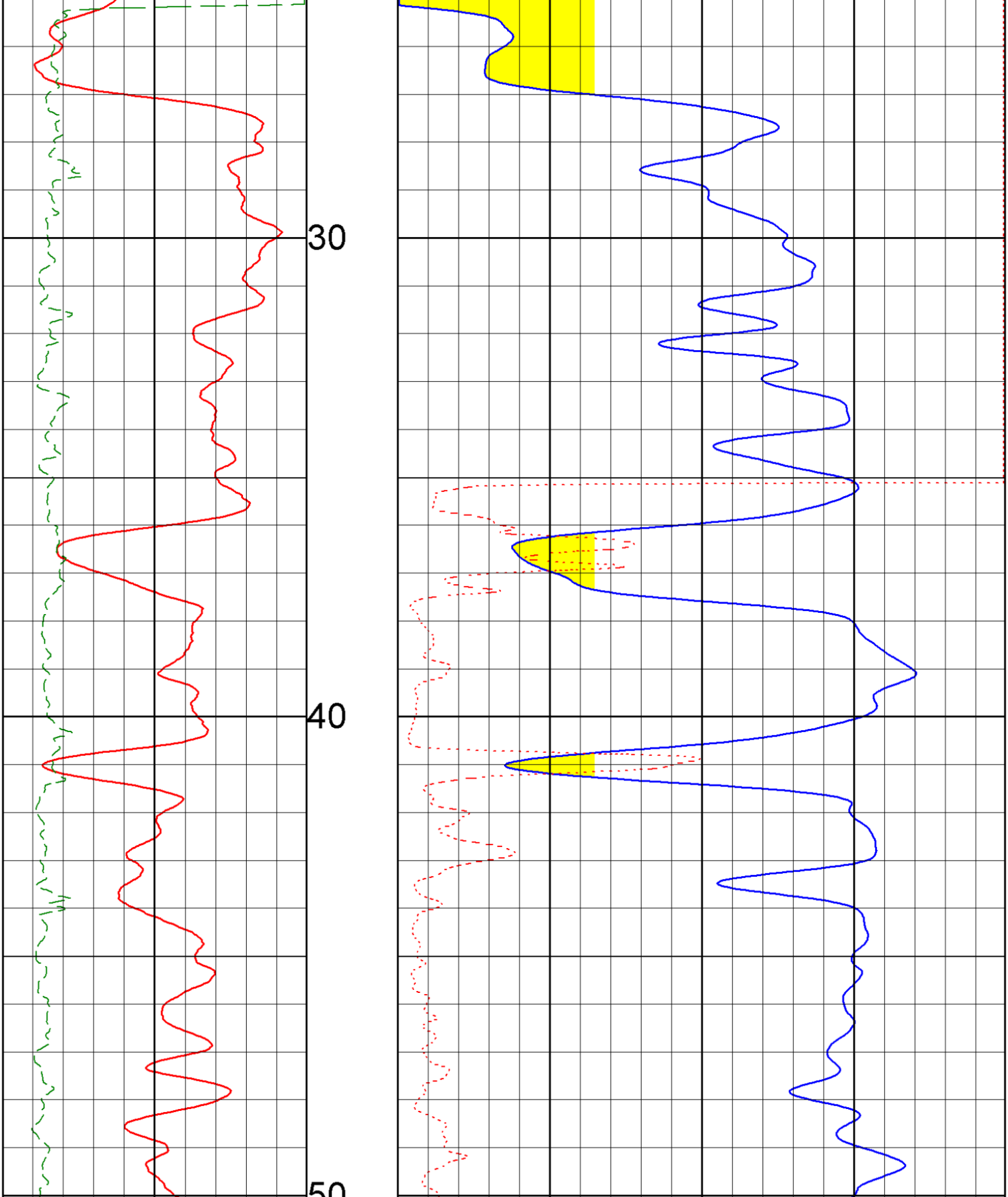
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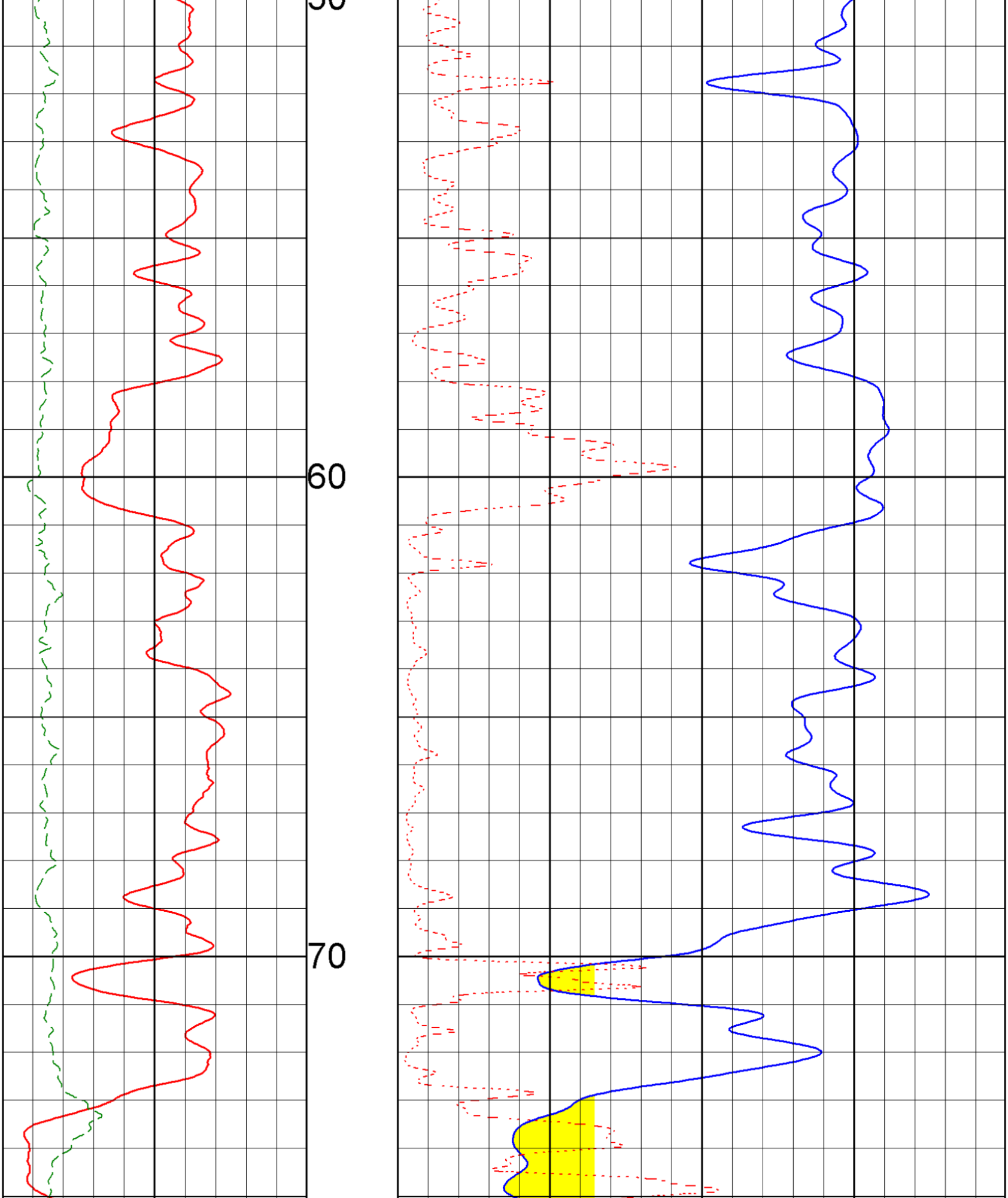
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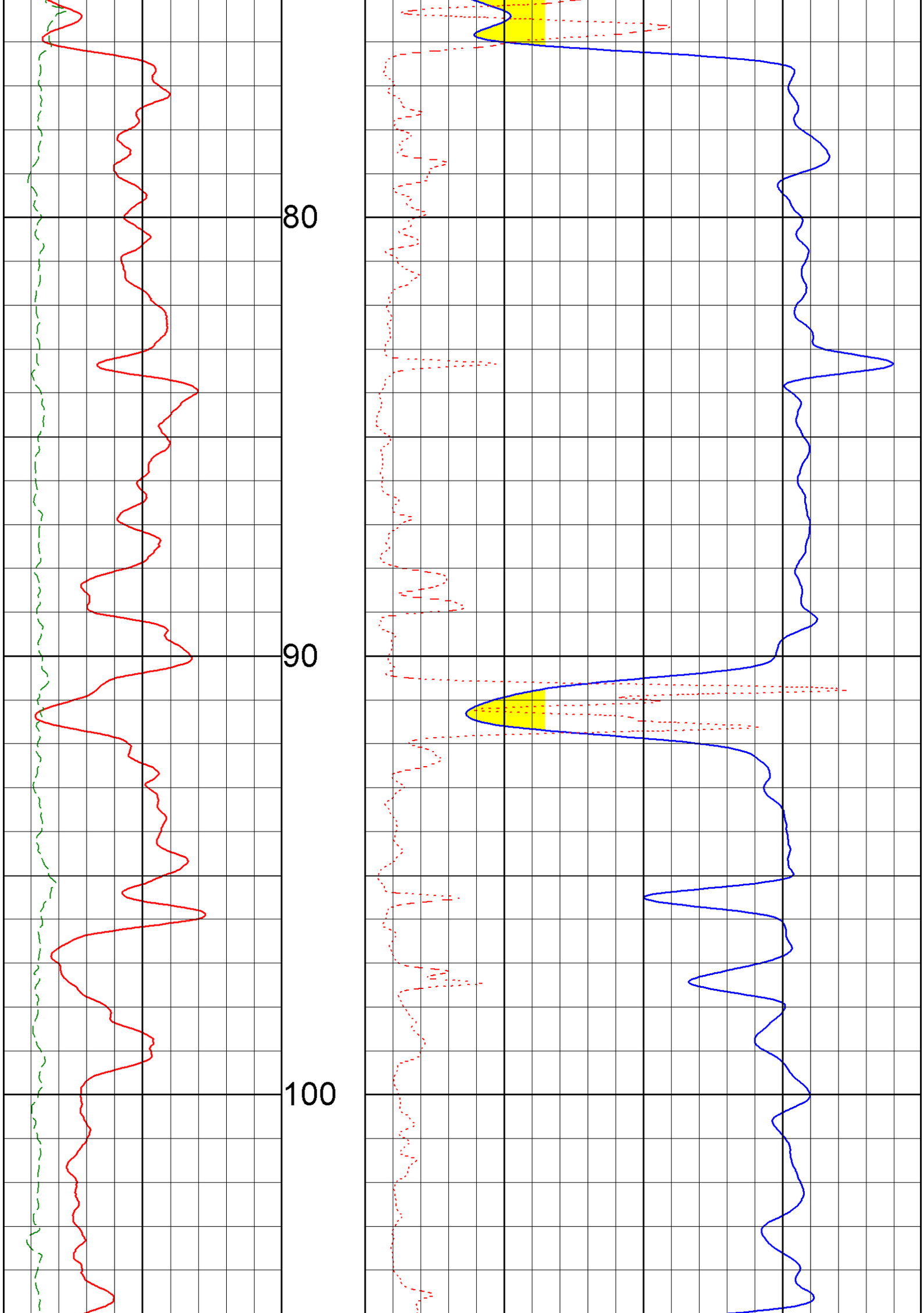
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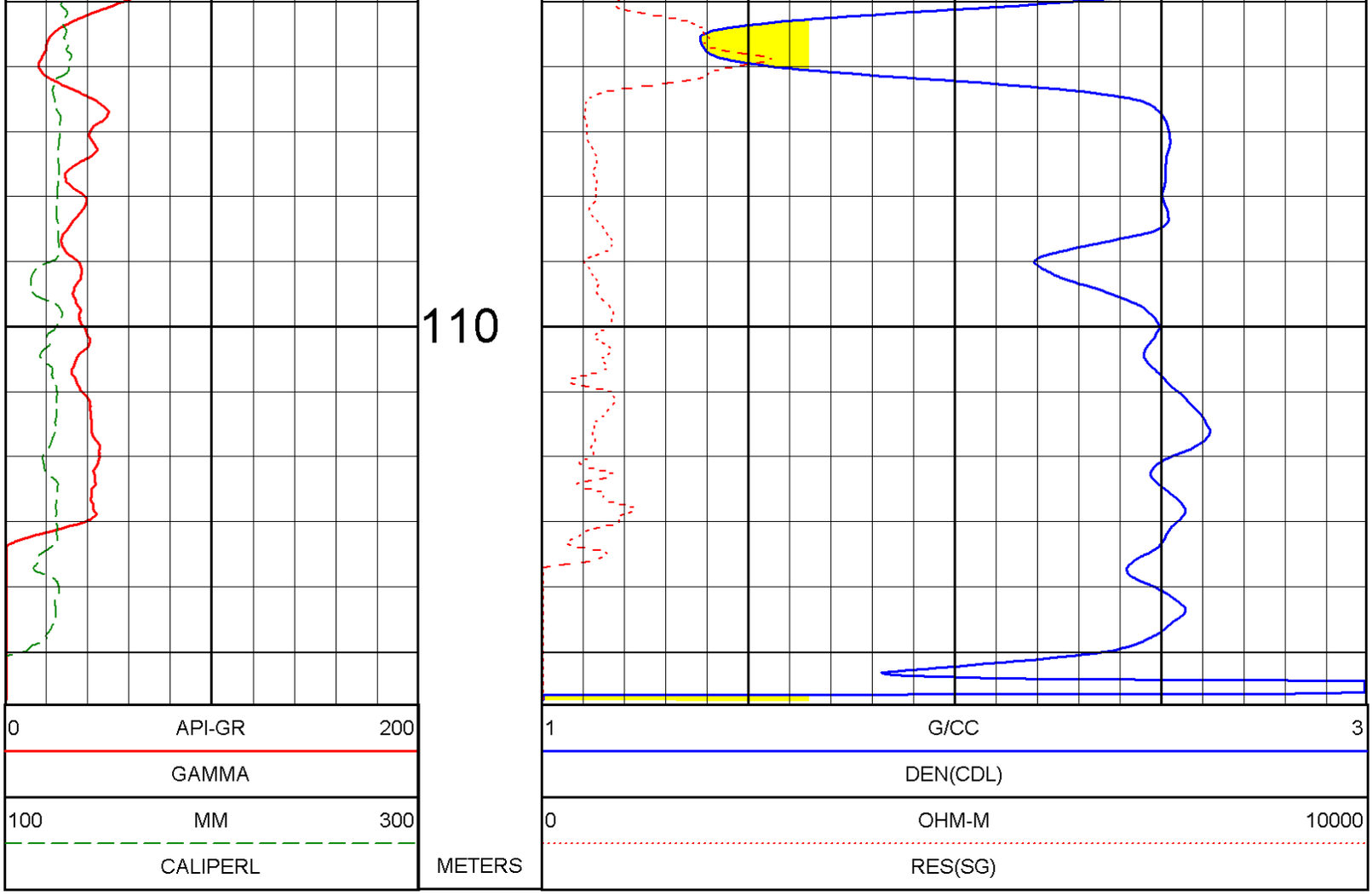


DENSITY 1:100 CM12-34A 10/14/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 99999	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 08/21/2012		VERSION = 3.64KF

TOOL CALIBRATION CM12-34A 10/14/12 03:36
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

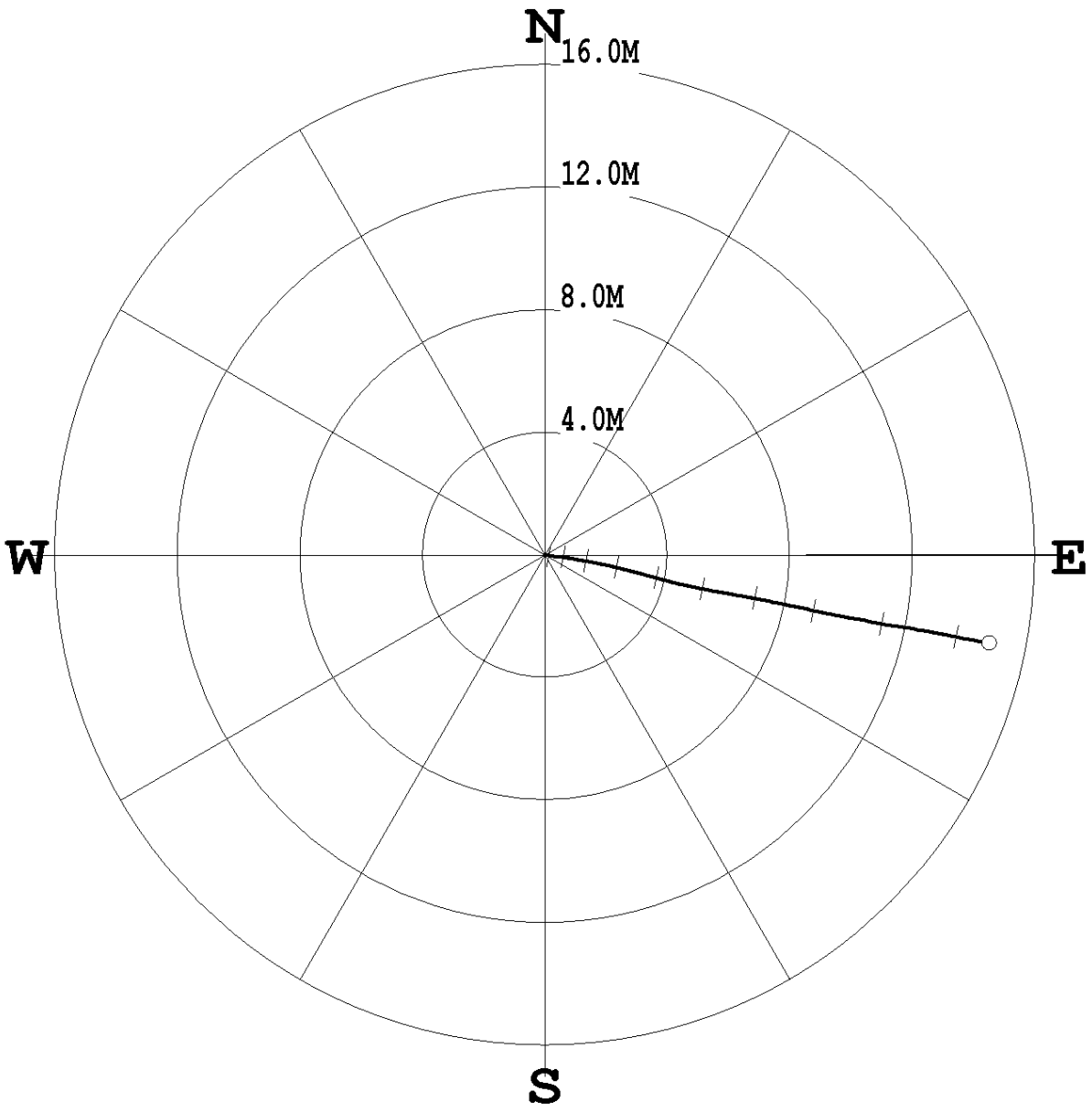
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: N/A
HOLE ID: CM12-34A
DATE OF LOG: 10/14/12
PROBE: 9055A 59

MAG DECL: 15.3

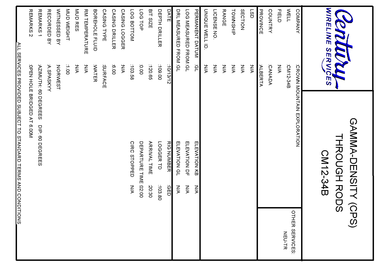
SCALE: 2 M/CM
TRUE DEPTH: 114.35 M
AZIMUTH: 101.2
DISTANCE: 14.8 M
+ = 10 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM12-34A
FIELD OFFICE : CENTURY GEO DATE OF LOG : 10/14/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 15.300 DEPTH UNITS : METERS
LOG: CM12-34A_10-14-12_03-04_9055A_.02_12.00_115.70_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
12.00	12.00	0.00	0.00	0.0	73.4	0.2	73.4
13.00	13.00	-0.00	0.00	0.0	91.1	0.6	72.0
14.00	14.00	-0.00	0.01	0.0	95.5	0.3	84.8
15.00	15.00	-0.00	0.02	0.0	91.0	0.8	89.5
16.00	16.00	0.00	0.03	0.0	88.8	1.2	83.3
17.00	17.00	-0.00	0.05	0.0	90.9	1.0	93.6
18.00	18.00	-0.00	0.07	0.1	91.8	0.9	77.8
19.00	19.00	-0.00	0.09	0.1	93.0	1.4	97.7
20.00	20.00	-0.01	0.12	0.1	94.8	2.0	121.5
21.00	21.00	-0.02	0.15	0.2	96.4	2.0	97.3
22.00	22.00	-0.02	0.19	0.2	97.0	1.8	101.8
23.00	23.00	-0.03	0.23	0.2	97.0	2.2	92.5
24.00	24.00	-0.04	0.27	0.3	97.9	2.3	94.3
25.00	24.99	-0.05	0.31	0.3	98.4	2.1	97.3
26.00	25.99	-0.05	0.35	0.4	98.1	2.6	74.5
27.00	26.99	-0.06	0.41	0.4	97.9	3.7	85.1
28.00	27.99	-0.06	0.47	0.5	97.4	3.4	97.3
29.00	28.99	-0.06	0.52	0.5	96.9	3.5	96.5
30.00	29.99	-0.07	0.59	0.6	96.7	3.9	90.4
31.00	30.98	-0.08	0.65	0.7	97.3	3.9	127.1
32.00	31.98	-0.09	0.71	0.7	97.4	3.3	100.4
33.00	32.98	-0.10	0.78	0.8	97.4	3.9	94.8
34.00	33.98	-0.11	0.85	0.9	97.6	4.5	93.5
35.00	34.97	-0.13	0.92	0.9	97.8	4.4	96.9
36.00	35.97	-0.14	0.99	1.0	98.3	4.3	95.9
37.00	36.97	-0.16	1.07	1.1	98.4	4.5	99.3
38.00	37.97	-0.17	1.15	1.2	98.4	4.8	105.6
39.00	38.96	-0.18	1.24	1.3	98.5	5.6	95.0
40.00	39.96	-0.20	1.33	1.3	98.4	5.1	91.0
41.00	40.95	-0.21	1.41	1.4	98.5	5.3	128.0
42.00	41.95	-0.23	1.50	1.5	98.6	5.4	103.9
43.00	42.94	-0.25	1.59	1.6	98.9	5.7	99.7
44.00	43.94	-0.27	1.68	1.7	99.0	6.1	96.0
45.00	44.93	-0.29	1.79	1.8	99.2	5.9	104.0
46.00	45.93	-0.31	1.89	1.9	99.3	6.4	104.5
47.00	46.92	-0.33	1.99	2.0	99.4	5.8	107.5
48.00	47.92	-0.35	2.10	2.1	99.6	6.1	95.1
49.00	48.91	-0.38	2.21	2.2	99.7	6.8	111.8
50.00	49.90	-0.41	2.32	2.4	99.9	6.8	101.5
51.00	50.90	-0.43	2.44	2.5	100.1	7.0	99.1
52.00	51.89	-0.47	2.56	2.6	100.3	7.3	102.7
53.00	52.88	-0.49	2.68	2.7	100.4	7.2	103.9
54.00	53.87	-0.53	2.81	2.9	100.6	7.4	93.3
55.00	54.86	-0.56	2.93	3.0	100.8	7.6	90.1
56.00	55.85	-0.59	3.06	3.1	101.0	7.7	105.6
57.00	56.85	-0.63	3.19	3.3	101.1	7.9	99.8
58.00	57.83	-0.67	3.33	3.4	101.4	8.5	108.2
59.00	58.82	-0.70	3.47	3.5	101.5	8.1	100.1
60.00	59.81	-0.74	3.61	3.7	101.6	8.1	105.4
61.00	60.80	-0.78	3.74	3.8	101.8	8.2	104.2
62.00	61.79	-0.82	3.88	4.0	101.9	8.5	111.1
63.00	62.78	-0.85	4.03	4.1	101.9	7.9	106.5
64.00	63.77	-0.90	4.16	4.3	102.2	9.2	100.3
65.00	64.76	-0.93	4.31	4.4	102.2	8.8	107.8
66.00	65.75	-0.96	4.46	4.6	102.2	9.2	93.8
67.00	66.73	-1.00	4.62	4.7	102.2	9.0	92.2
68.00	67.72	-1.03	4.77	4.9	102.2	9.4	104.7
69.00	68.71	-1.06	4.92	5.0	102.1	9.3	95.2
70.00	69.70	-1.10	5.08	5.2	102.2	9.4	95.8
71.00	70.68	-1.13	5.23	5.4	102.1	9.4	97.7
72.00	71.67	-1.16	5.39	5.5	102.1	9.4	103.7
73.00	72.66	-1.19	5.55	5.7	102.1	9.3	100.5
74.00	73.64	-1.22	5.72	5.8	102.0	10.0	101.3
75.00	74.63	-1.24	5.89	6.0	101.8	10.4	90.1
76.00	75.61	-1.27	6.06	6.2	101.8	10.4	97.5
77.00	76.60	-1.31	6.23	6.4	101.9	10.2	100.0
78.00	77.58	-1.34	6.41	6.5	101.8	10.2	98.9
79.00	78.56	-1.37	6.58	6.7	101.7	10.3	101.4
80.00	79.55	-1.41	6.76	6.9	101.7	8.3	104.5
81.00	80.53	-1.44	6.93	7.1	101.7	10.9	92.6
82.00	81.51	-1.47	7.12	7.3	101.6	10.7	103.7
83.00	82.50	-1.50	7.30	7.5	101.6	10.8	97.8
84.00	83.48	-1.56	7.47	7.6	101.8	10.4	96.4
85.00	84.46	-1.58	7.66	7.8	101.7	11.1	100.9
86.00	85.44	-1.62	7.85	8.0	101.6	11.2	99.9
87.00	86.42	-1.66	8.03	8.2	101.7	11.3	102.0
88.00	87.40	-1.70	8.22	8.4	101.7	11.7	93.8
89.00	88.38	-1.73	8.43	8.6	101.6	11.7	103.2
90.00	89.36	-1.79	8.62	8.8	101.7	12.1	108.8
91.00	90.34	-1.83	8.83	9.0	101.7	12.1	100.3
92.00	91.32	-1.87	9.03	9.2	101.7	12.2	99.7
93.00	92.29	-1.91	9.24	9.4	101.7	12.3	90.3
94.00	93.27	-1.96	9.45	9.7	101.7	12.7	96.7
95.00	94.24	-2.00	9.67	9.9	101.7	13.1	97.0
96.00	95.22	-2.04	9.89	10.1	101.7	13.0	103.5
97.00	96.19	-2.08	10.11	10.3	101.6	12.9	99.7
98.00	97.17	-2.11	10.34	10.5	101.5	12.6	101.3
99.00	98.14	-2.16	10.55	10.8	101.6	12.9	103.3
100.00	99.12	-2.21	10.77	11.0	101.6	13.4	103.6
101.00	100.09	-2.25	11.00	11.2	101.6	13.7	100.2
102.00	101.06	-2.29	11.24	11.5	101.5	13.7	100.6
103.00	102.03	-2.32	11.47	11.7	101.4	14.2	91.2
104.00	103.00	-2.36	11.70	11.9	101.4	14.0	101.6
105.00	103.97	-2.39	11.94	12.2	101.3	14.3	110.8
106.00	104.94	-2.45	12.17	12.4	101.4	13.3	99.3
107.00	105.91	-2.48	12.41	12.7	101.3	14.5	98.8
108.00	106.88	-2.52	12.65	12.9	101.3	14.2	102.8
109.00	107.85	-2.57	12.89	13.1	101.3	13.9	101.6
110.00	108.82	-2.61	13.13	13.4	101.2	13.1	110.0
111.00	109.80	-2.66	13.36	13.6	101.3	13.9	100.4
112.00	110.77	-2.71	13.60	13.9	101.3	14.7	96.8
113.00	111.73	-2.75	13.84	14.1	101.2	14.6	98.3
114.00	112.70	-2.79	14.08	14.4	101.2	14.3	119.6
115.00	113.67	-2.85	14.33	14.6	101.2	14.7	103.3
115.70	114.31	-2.88	14.49	14.8	101.2	14.5	98.5


Century WIRELINE SERVICES
GAMMA-DENSITY (GPS)
THROUGH RODS
CM12-34B
CROWN MOUNTAIN EXPLORATION
OTHER SERVICES
NONE
COMPANY
WELL
CM12-34B
FIELD
COUNTY
PROVINCE
ALBERTA
COUNTRY
CANADA
SECTION
TOWNSHIP
RANGE
PERMANENT DATUM
LOG MEASURED FROM
DRILLING MEASURED FROM
ELEVATION
ELEVATIONS
ELEVATION GF
ELEVATION KB
N/A
DEPTH DRILLER
DEPTH LOGGER
BTM LOG INTERVAL
TOP LOG INTERVAL
CASING DRILLER
CASING LOGGER
CASING TYPE
CASING WEIGHT
RUN NUMBER
MAX REC TEMP
EQUIP LOCATION
RECORDED BY
WITNESSED BY
DRILLER'S TIME
LOGGER'S TIME
DATE
CHC STORED
N/A
N/A
N/A

Century WIRELINE SERVICES

COMPANY: CENTURY WIRELINE SERVICES
WELL: CM12-34B
FIELD: GRAVIA
COUNTY: GRAVIA
PROVINCE: ALBERTA
COUNTRY: CANADA
DATE: 10/14/12
SECTION: N/A
TOWNSHIP: N/A
LATITUDE: N/A
LONGITUDE: N/A
PERMANENT DATUM: GROUND LEVEL
LOG MEASURED FROM: KB
DRILL MEASURED FROM: KB
ELEVATION KB: N/A
ELEVATION GL: N/A
ELEVATION DF: N/A
CASING TYPE: SURFACE
CASING DRILLER: 109.00
CASING LOGGER: 109.00
CASING WEIGHT: 32
CASING GRADE: H40
CASING FLUID: WATER
BIT SIZE: 120.65
DEPTH DRILLER: 1030.00
DEPTH LOGGER: 1033.00
BTM LOG INTERVAL: 1033.00
TOP LOG INTERVAL: 109.00
OPEN HOLE FLUID: WATER
TIME LOGGER ON BOTTOM: 20:30
TIME LOGGED: 10/14/12
MAX REC TEMP: N/A
EQUIP. LOCATION: N/A
RECORDED BY: A.GRAVIA
WITNESSED BY: NORWEST
RUN NUMBER: 1
REMARKS: ALL LOGGING DEPTHS REFERENCED TO CASING FLANGE. ALL LOGGING DEPTHS REFERENCED TO CASING FLANGE. OPEN HOLE 3 STRINGS AT 1030M

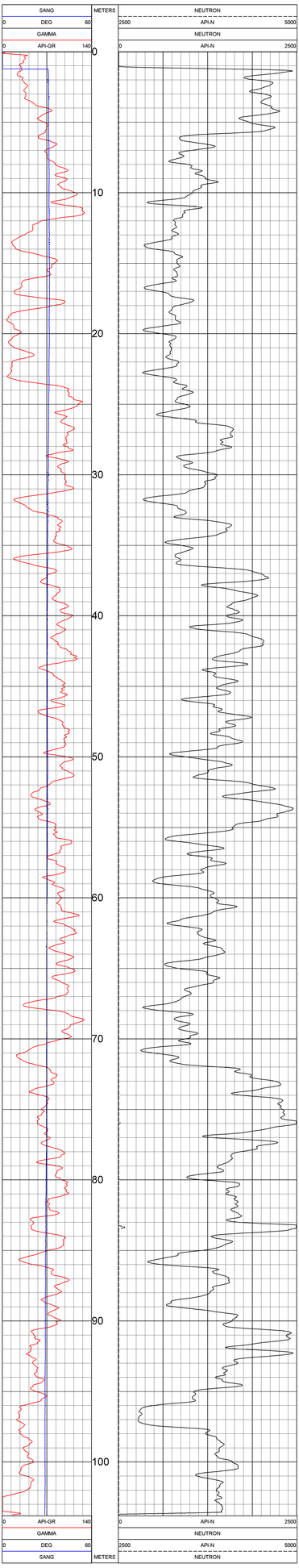
DEPTH REFERENCE: GROUND
DEPTH: N/A

GAMMA - NEUTRON THROUGH RODS CM12-34B

NEUTRON THROUGH RODS 1:100 CM12-34B 10/14/12

LOG PARAMETERS

MATRIX DENSITY: 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T: 177
MAGNETIC DECL: 15.3 ELECT. CUTOFF 99999 BIT SIZE 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR 0 08/28/2012 VERSION = 3.64KF



NEUTRON THROUGH RODS 1:100 CM12-34B 10/14/12

LOG PARAMETERS

MATRIX DENSITY: 2.65 NEUTRON MATRIX : SANDSTONE MATRIX DELTA T: 177
MAGNETIC DECL: 15.3 ELECT. CUTOFF 99999 BIT SIZE 120.65
PRESENTATION NAME/DATE = 2012-CROWN_NEUTRON-TR 0 08/28/2012 VERSION = 3.64KF

TOOL CALIBRATION CM12-34B 10/14/12 00:22
TOOL 9055A TM VERSION 4
SERIAL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug02,12	04:09:25	GAMMA	Default	[CPS]	Default	[CPS]
	Aug02,12	04:09:25	GAMMA	545.000	[API-GR]	452.000	[CPS]
2	Oct15,07	08:00:58	POROSITY	Default	[CPS]		
3	May12,08	08:20:59	RES	0.000	[OHM]	9676.000	[CPS]
	May12,08	08:20:59	RES	100.000	[OHM]	7978.000	[CPS]
4	May12,08	08:20:52	SP	0.000	[MV]	1.000	[CPS]
	May12,08	08:20:52	SP	382.000	[MV]	3462.000	[CPS]
5	Dec04,09	10:40:49	NEUTRON	0.000	[API-N]	1.000	[CPS]
	Dec04,09	10:40:49	NEUTRC	271.000	[API-N]	95.000	[CPS]
6	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]
	Oct15,07	08:00:58	TEMP	Default	[CPS]	Default	[CPS]

Century WIRELINE SERVICES

COMPENSATED DENSITY
GAMMA - CALIPER
CM12-36B

COMPANY	:CROWN MOUNTAIN EXPLORATION
WELL	:CM12-36B
FIELD	:ALEXANDER WEST
COUNTRY	:CANADA
PROVINCE	:BRITISH COLUMBIA

OTHER SERVICES:
9068SD
9055DEV

LSD	:N/A
SECTION	:N/A
TOWNSHIP	:N/A
RANGE	:N/A
LICENSE NO.	:N/A
UNIQUE WELL ID.	:N/A

PERMANENT DATUM	:GL	ELEVATION KB	:N/A
LOG MEASURED FROM	:GL	ELEVATION DF	:N/A
DRL MEASURED FROM	:GL	ELEVATION GL	:N/A

DATE	:11/16/12	RIG NUMBER	:GED
DEPTH DRILLER	:75	LOGGER TD	:71.9
BIT SIZE	:120.65	ARRIVAL TIME	:07:00
LOG TOP	:0.19	DEPARTURE TIME	:11:30
LOG BOTTOM	:71.90	CIRC STOPPED	:07:00
CASING LOGGER	:5.8		
CASING DRILLER	:6		
CASING TYPE	:STEEL		
BOREHOLE FLUID	:H2O		
RM TEMPERATURE	:N/A		
MUD RES	:N/A		
MUD WEIGHT	:1.00		
WITNESSED BY	:M.ESTRICK		
RECORDED BY	:J.GRESCHUK		
REMARKS 1	:70 DEGREE AZIMUTH		
REMARKS 2	:60 DEGREE DIP		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

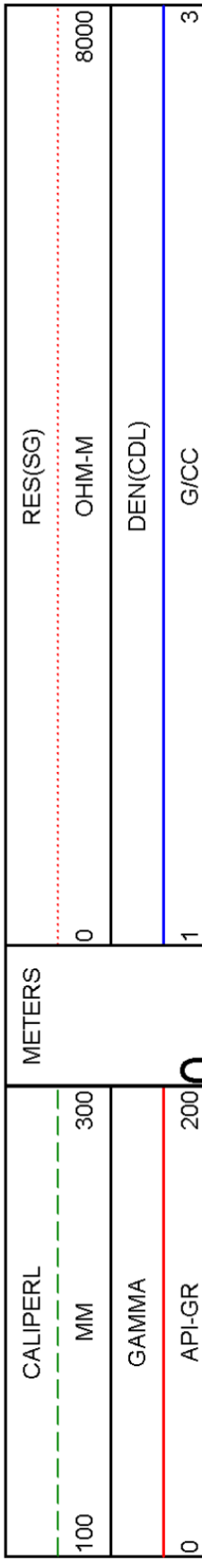
BULK DENSITY 1:100 CM12-36B 11/16/12

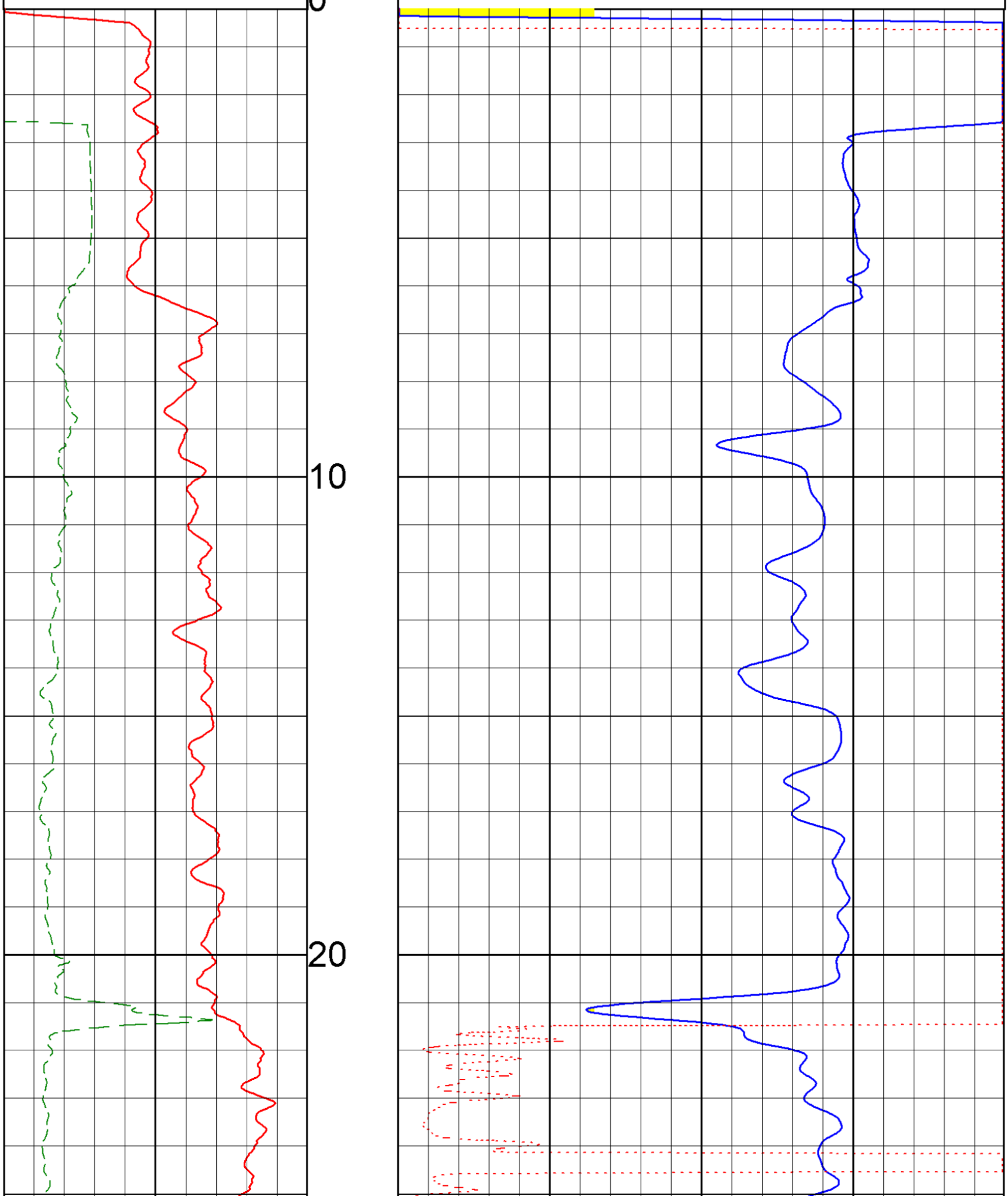
LOG PARAMETERS

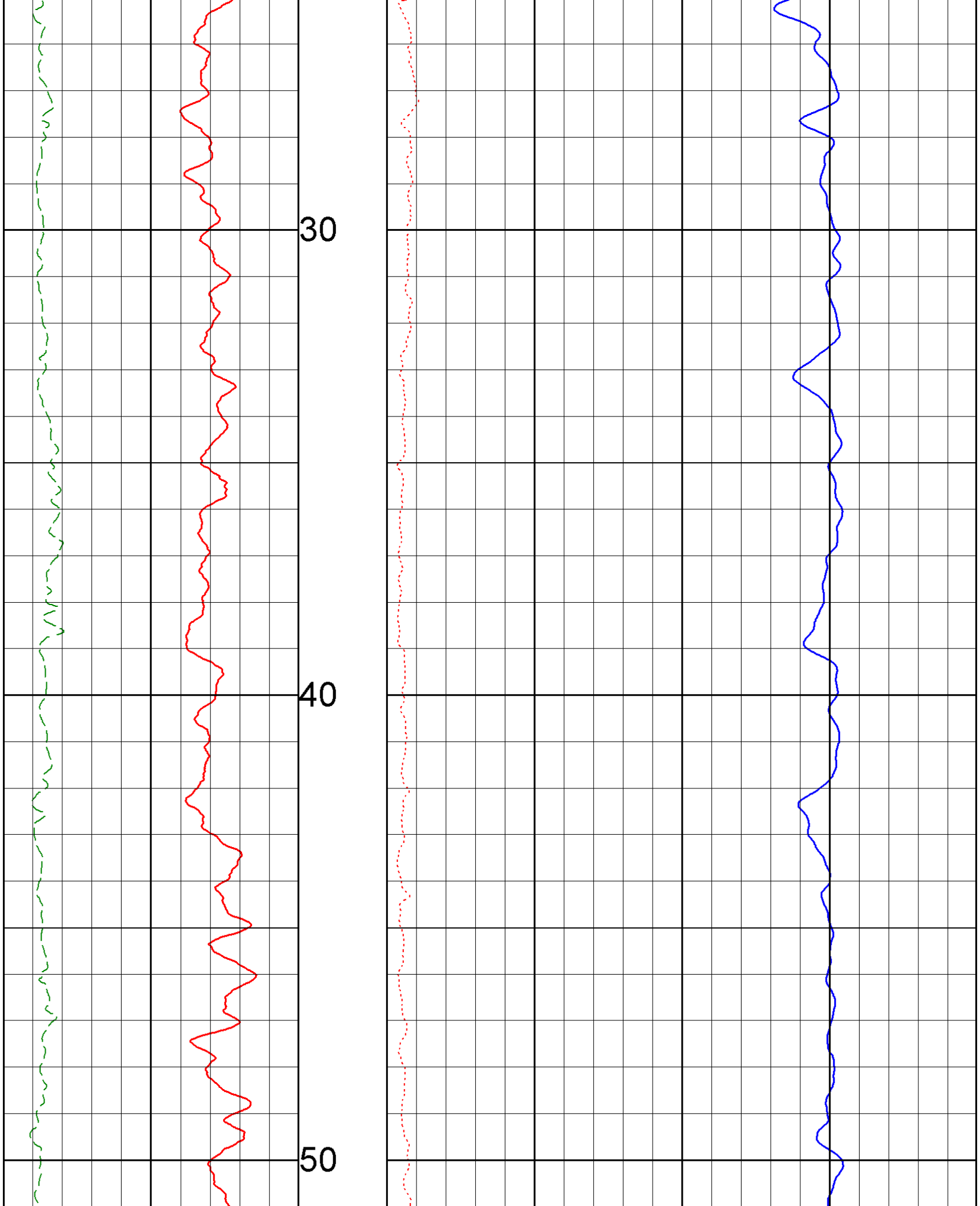
MATRIX DENSITY : 2.65
MAGNETIC DECL : 15.3
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 11/16/2012

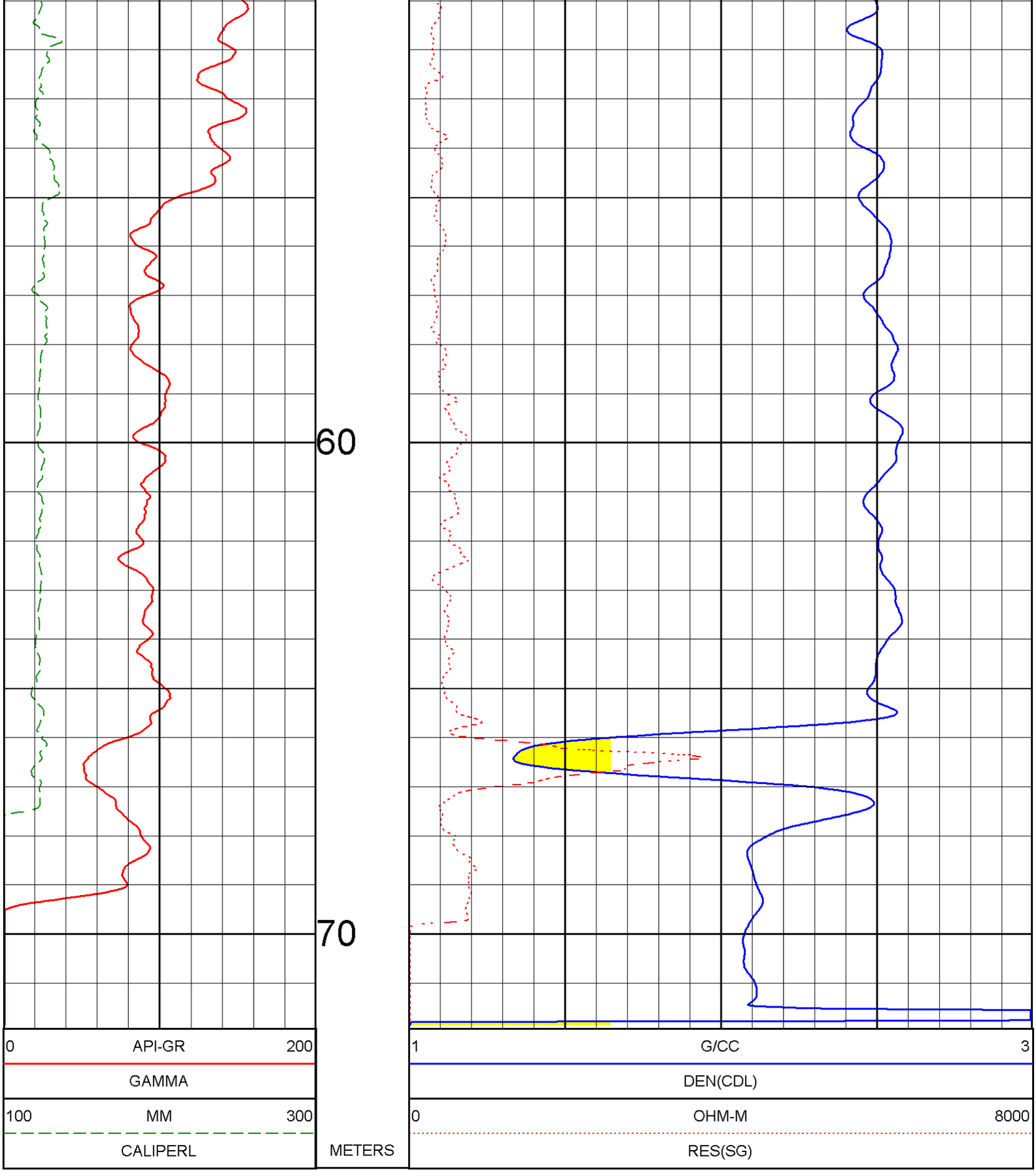
NEUTRON MATRIX : SANDSTONE
ELECT. CUTOFF : 75000

MATRIX DELTA T : 177
BIT SIZE : 120.65
VERSION = 3.64KG




0
10
20


30
40
50



BULK DENSITY 1:100 CM12-36B 11/16/12

LOG PARAMETERS

MATRIX DENSITY : 2.65	NEUTRON MATRIX : SANDSTONE	MATRIX DELTA T : 177
MAGNETIC DECL : 15.3	ELECT. CUTOFF : 75000	BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-RES.0 11/16/2012		VERSION = 3.64KG

TOOL CALIBRATION CM12-36B 11/16/12 10:42
TOOL 9239C1 TM VERSION 2025
SERIAL NUMBER 408

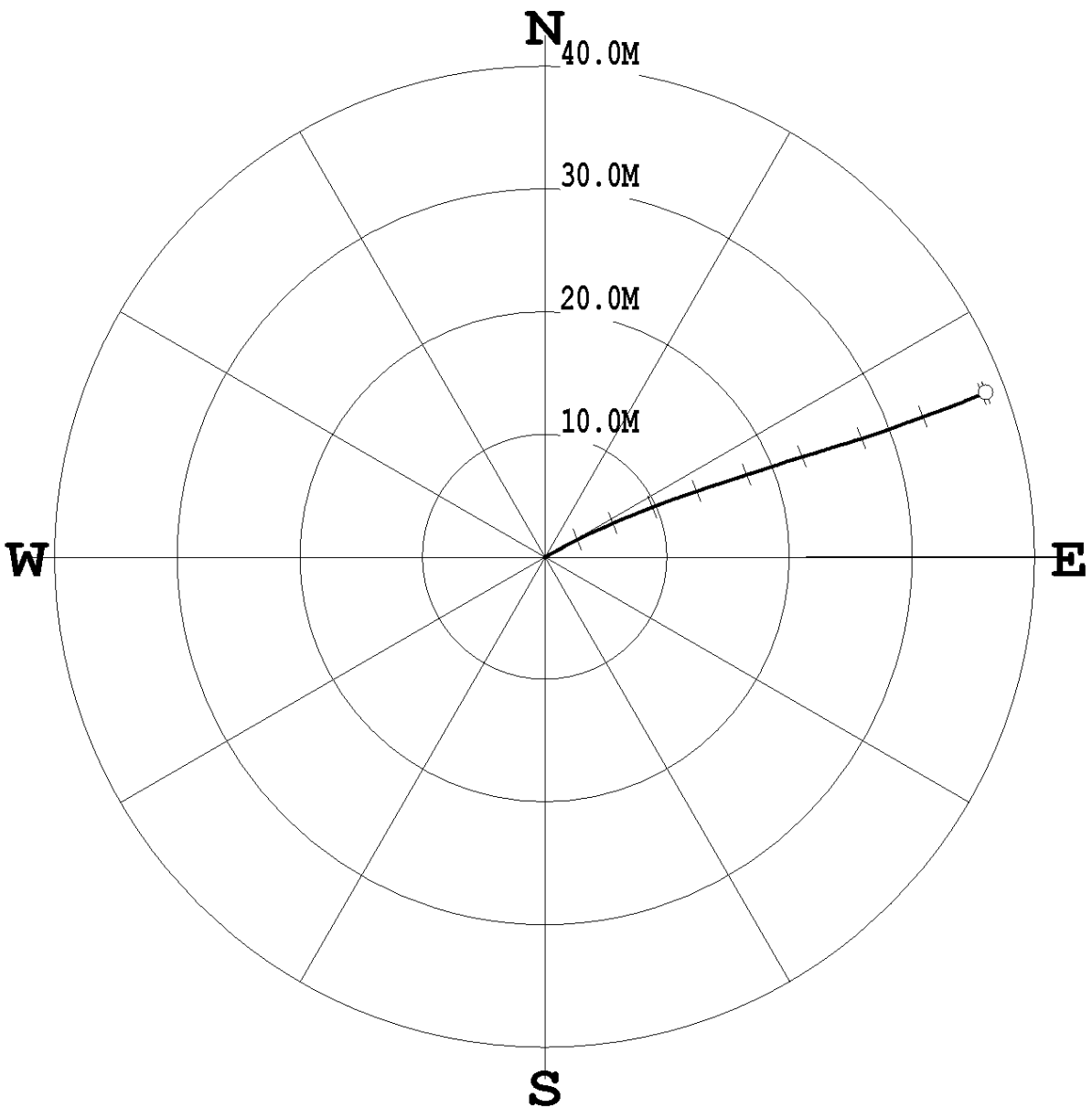
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Apr19,12	13:57:22	GAMMA	0.000	[API-GR]	8.000	[CPS]
	Apr19,12	13:57:22	GAMMA	545.000	[API-GR]	557.000	[CPS]
2	Apr19,12	13:15:59	VOLTAGE	27.300	[MV]	6079.000	[CPS]
	Apr19,12	13:15:59	VOLTAGE	235.500	[MV]	33551.000	[CPS]
3	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
	Nov17,06	07:48:07	CALIPER	Default	[CPS]	Default	[CPS]
4	Jul29,12	18:14:43	DEN(LS)	1.620	[G/CC]	13194.000	[CPS]
	Jul29,12	18:14:43	DEN(LS)	2.612	[G/CC]	1751.000	[CPS]
5	Jul29,12	18:13:57	DEN(SS)	1.590	[G/CC]	52810.000	[CPS]
	Jul29,12	18:13:57	DEN(SS)	2.580	[G/CC]	21773.000	[CPS]
6	Aug03,12	20:10:27	CALIPERL	102.000	[INCH]	166459.000	[CPS]
	Aug03,12	20:10:27	CALIPERL	200.000	[INCH]	271787.000	[CPS]
7	Apr19,12	13:16:17	CURRENT	27.300	[UA]	6142.000	[CPS]
	Apr19,12	13:16:17	CURRENT	235.500	[UA]	24464.000	[CPS]
8	Nov17,06	07:48:07	F	Default	[CPS]		
9	Nov17,06	07:48:07	X	Default	[CPS]		

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: ALEXANDER WEST
HOLE ID: CM12-36B
DATE OF LOG: 11/16/12
PROBE: 9055A 59

MAG DECL: 15.3

SCALE: 5 M/CM
TRUE DEPTH: 55.35 M
AZIMUTH: 69.6
DISTANCE: 38.4 M
+ = 5 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL HOLE ID. : CM12-36B
FIELD OFFICE : CENTURY DATE OF LOG : 11/16/12
DATA FROM : N/A PROBE : 9055A , 59
MAG. DECL. : 15.300 DEPTH UNITS : METERS
LOG: CM12-36B_11-16-12_10-13_9055A_.02_10.00_69.79_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
10.04	10.04	0.01	0.01	0.0	60.3	30.7	60.3
11.00	10.86	0.24	0.44	0.5	61.4	30.7	62.4
12.00	11.72	0.48	0.89	1.0	61.5	31.1	60.2
13.00	12.58	0.72	1.34	1.5	61.6	29.4	63.1
14.00	13.44	0.99	1.78	2.0	61.0	31.8	61.8
15.00	14.29	1.23	2.24	2.6	61.4	31.9	64.2
16.00	15.14	1.46	2.72	3.1	61.8	31.9	63.9
17.00	15.98	1.71	3.19	3.6	61.8	32.3	64.0
18.00	16.83	1.93	3.67	4.1	62.3	32.3	66.1
19.00	17.68	2.14	4.16	4.7	62.7	32.2	67.2
20.00	18.52	2.36	4.66	5.2	63.2	32.5	67.1
21.00	19.36	2.57	5.16	5.8	63.5	33.5	65.1
22.00	20.19	2.81	5.66	6.3	63.6	33.1	66.9
23.00	21.02	3.03	6.16	6.9	63.8	34.2	66.5
24.00	21.85	3.25	6.67	7.4	64.1	34.7	67.4
25.00	22.68	3.44	7.20	8.0	64.5	35.0	68.4
26.00	23.50	3.66	7.73	8.6	64.7	35.2	70.3
27.00	24.31	3.88	8.27	9.1	64.9	35.9	66.8
28.00	25.11	4.10	8.83	9.7	65.1	36.2	69.2
29.00	25.92	4.30	9.38	10.3	65.4	36.5	68.6
30.00	26.72	4.52	9.94	10.9	65.6	37.2	67.3
31.00	27.51	4.73	10.51	11.5	65.8	37.3	70.1
32.00	28.30	4.92	11.09	12.1	66.1	38.3	71.4
33.00	29.08	5.13	11.68	12.8	66.3	37.8	73.1
34.00	29.86	5.32	12.28	13.4	66.6	39.2	72.4
35.00	30.63	5.53	12.88	14.0	66.8	41.9	64.8
36.00	31.39	5.74	13.49	14.7	66.9	40.1	72.2
37.00	32.16	5.94	14.10	15.3	67.2	40.4	72.2
38.00	32.92	6.14	14.72	15.9	67.4	43.1	67.4
39.00	33.68	6.34	15.34	16.6	67.5	41.3	72.8
40.00	34.43	6.54	15.97	17.3	67.7	40.3	73.3
41.00	35.17	6.75	16.60	17.9	67.9	42.2	73.0
42.00	35.91	6.95	17.24	18.6	68.1	41.5	73.2
43.00	36.65	7.16	17.89	19.3	68.2	43.5	71.0
44.00	37.37	7.38	18.53	20.0	68.3	44.6	66.1
45.00	38.09	7.60	19.19	20.6	68.4	44.5	68.8
46.00	38.81	7.83	19.85	21.3	68.5	43.9	73.8
47.00	39.53	8.03	20.52	22.0	68.6	44.1	73.4
48.00	40.23	8.23	21.19	22.7	68.8	44.8	74.0
49.00	40.95	8.42	21.87	23.4	68.9	45.0	71.9
50.00	41.66	8.64	22.54	24.1	69.0	46.9	70.7
51.00	42.35	8.86	23.22	24.9	69.1	46.8	70.3
52.00	43.05	9.07	23.90	25.6	69.2	46.7	70.7
53.00	43.74	9.27	24.59	26.3	69.4	46.4	71.7
54.00	44.43	9.50	25.27	27.0	69.4	45.0	77.0
55.00	45.13	9.70	25.96	27.7	69.5	47.4	71.8
56.00	45.81	9.93	26.66	28.4	69.6	47.6	68.1
57.00	46.49	10.16	27.35	29.2	69.6	47.1	71.0
58.00	47.18	10.40	28.03	29.9	69.6	46.7	71.0
59.00	47.86	10.65	28.72	30.6	69.7	47.3	69.8
60.00	48.55	10.92	29.39	31.4	69.6	47.7	72.6
61.00	49.24	11.15	30.07	32.1	69.7	46.6	65.9
62.00	49.93	11.40	30.76	32.8	69.7	46.7	70.8
63.00	50.62	11.65	31.44	33.5	69.7	46.3	70.8
64.00	51.31	11.88	32.12	34.2	69.7	45.1	71.6
65.00	52.00	12.14	32.79	35.0	69.7	46.1	68.5
66.00	52.70	12.39	33.46	35.7	69.7	45.9	70.1
67.00	53.39	12.64	34.13	36.4	69.7	46.9	69.7
68.00	54.09	12.92	34.77	37.1	69.6	46.0	68.4
69.00	54.79	13.19	35.44	37.8	69.6	45.7	68.7
69.80	55.32	13.39	35.94	38.4	69.6	45.6	70.9

COMPANY	CROWN MOUNTAIN EXPLORATION
WELL	CM12-36B
FIELD	ALEXANDER WEST
COUNTRY	CANADA
PROVINCE	BRITISH COLUMBIA
LSD	N/A
SECTION	N/A
TOWNSHIP	N/A
RANGE	N/A
LICENSE NO.	N/A
LOG MEASURED ID	N/A
PERMANENT DATUM	GL
LOG MEASURED FROM	GL
DRL MEASURED FROM	GL
DATE	11/16/12
DEPTH DRILLER	75
DEPTH LOGGER	80.65
LOG TOP	0.25
LOG BOTTOM	70.45
CASING LOGGER	N/A
CASING DRILLER	8
CASING TYPE	STEEL
BOREHOLE FLUID	H2O
RM @ MEASURED TEMP	N/A
MUD RES	N/A
MUD WEIGHT	1.00
WITNESSED BY	M.ESTRICK
RECORDED BY	J.GRESCHUK
REMARKS 1	70 DEGREE AZIMUTH
REMARKS 2	60 DEGREE DIP
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS	

ELEVATION KB N/A
ELEVATION DF N/A
ELEVATION GL N/A
RIG NUMBER GED
LOGGER TD 70.45
TIME LOG STARTED 05:30
TIME LOGGER AT BTM 11:30
CIRC STOPPED 07:00

OTHER SERVICES
9000SDEV
9250RDEN

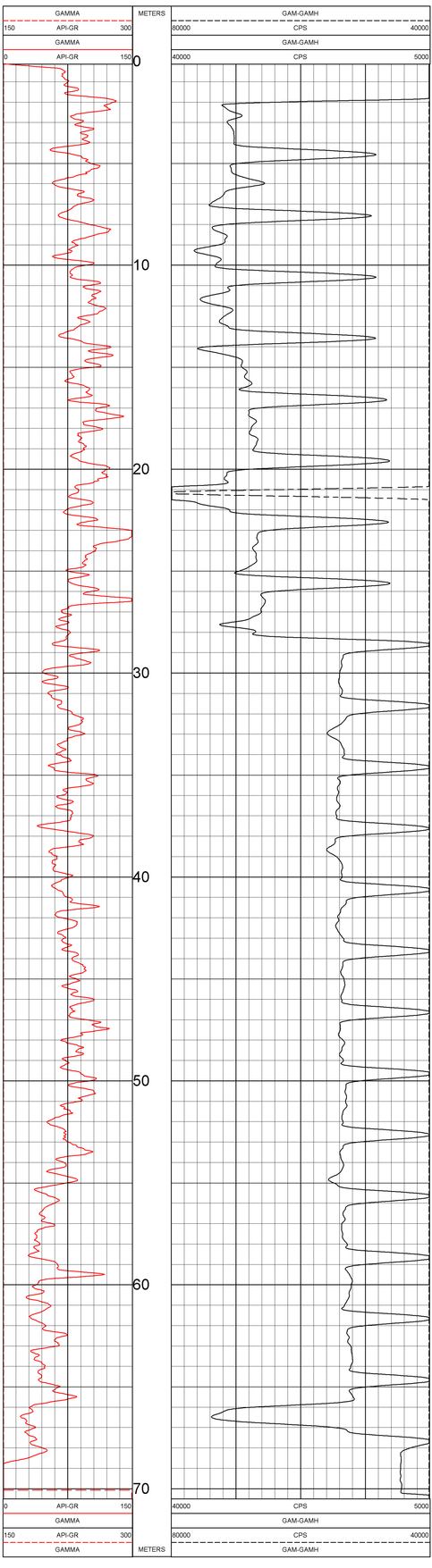
Century WIRELINE SERVICES

GAMMA-DENSITY (CPS) THROUGH RODS CM12-36B

SLIM-DENSITY 1:100 CM12-36B 11/16/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 | NEUTRON MATRIX : SANDSTONE | MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3 | ELECT. CUTOFF : 75000 | BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-TR.0 11/16/2012 | VERSION = 3.64KG



SLIM-DENSITY 1:100 CM12-36B 11/16/12

LOG PARAMETERS

MATRIX DENSITY : 2.65 | NEUTRON MATRIX : SANDSTONE | MATRIX DELTA T : 177
MAGNETIC DECL. : 15.3 | ELECT. CUTOFF : 75000 | BIT SIZE : 120.65
PRESENTATION NAME/DATE = 2012-CROWN_DENSITY-TR.0 11/16/2012 | VERSION = 3.64KG

TOOL CALIBRATION CM12-36B 11/16/12 08:11
TOOL 9068A TM VERSION 1
SERIAL NUMBER 643

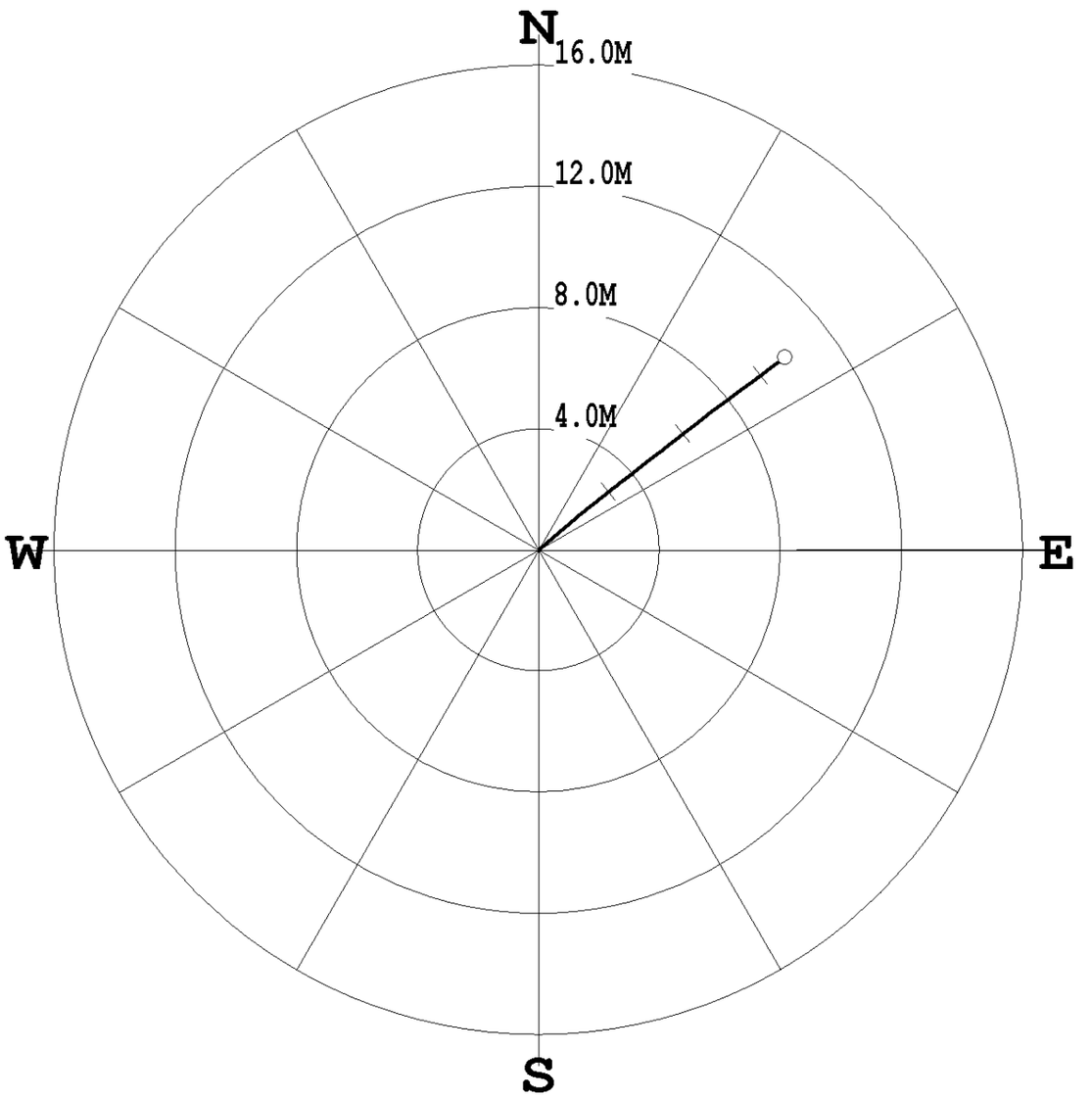
	DATE	TIME	SENSOR	STANDARD		RESPONSE	
1	Aug28,12	07:52:32	GAMMA	Default	[CPS]	Default	[CPS]
	Aug28,12	07:52:32	GAMMA	545.000	[API-GR]	195.000	[CPS]

PLAN VIEW
COMPU-LOG DEVIATION

CLIENT: CROWN MOUNTAIN EXPLORATION
LOCATION: ALEXANDER WEST
HOLE ID: CM12-38B
DATE OF LOG: 11/17/12
PROBE: 9055A 59

MAG DECL: 15.3

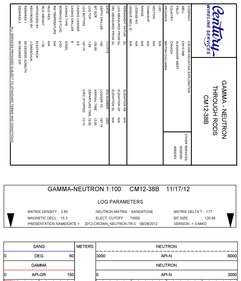
SCALE: 2 M/CM
TRUE DEPTH: 26.58 M
AZIMUTH: 52.0
DISTANCE: 10.3 M
+ = 5 M INCR
○ = BOTTOM OF HOLE



* * * * * * * COMPU-LOG - VERTICAL DEVIATION * * * * * * *

CLIENT : CROWN MOUNTAIN EXPL
FIELD OFFICE : CENTURY
DATA FROM : N/A
MAG. DECL. : 15.300
HOLE ID. : CM12-38B
DATE OF LOG : 11/17/12
PROBE : 9055A , 59
DEPTH UNITS : METERS
LOG: CM12-38B_11-17-12_16-29_9055A_.02_10.00_29.53_DEVI.log

CABLE DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
10.04	10.04	0.01	0.01	0.0	48.7	29.3	48.7
11.00	10.86	0.33	0.38	0.5	49.0	30.4	50.2
12.00	11.72	0.67	0.77	1.0	49.2	30.9	51.0
13.00	12.57	1.00	1.17	1.5	49.3	30.8	49.7
14.00	13.43	1.33	1.56	2.1	49.5	31.4	48.4
15.00	14.29	1.65	1.97	2.6	50.0	32.5	51.0
16.00	15.14	1.98	2.38	3.1	50.2	32.1	52.0
17.00	15.99	2.30	2.79	3.6	50.5	29.9	53.2
18.00	16.84	2.62	3.20	4.1	50.7	31.8	51.3
19.00	17.70	2.94	3.61	4.7	50.8	33.3	52.6
20.00	18.54	3.26	4.04	5.2	51.1	31.8	53.1
21.00	19.38	3.59	4.46	5.7	51.1	32.8	52.9
22.00	20.22	3.93	4.88	6.3	51.2	32.6	54.3
23.00	21.07	4.25	5.31	6.8	51.3	32.3	52.6
24.00	21.91	4.59	5.73	7.3	51.3	31.7	54.8
25.00	22.76	4.90	6.16	7.9	51.5	32.2	56.2
26.00	23.60	5.22	6.60	8.4	51.6	32.8	52.4
27.00	24.44	5.54	7.04	9.0	51.8	32.7	52.5
28.00	25.28	5.87	7.47	9.5	51.9	32.7	51.4
29.00	26.12	6.19	7.90	10.0	51.9	32.3	53.9
29.54	26.55	6.35	8.11	10.3	52.0	32.5	53.6



GAMMA-NEUTRON 1:100 CM12-38B 11/17/12

LOG PARAMETERS

MATRIX DENSITY: 2.65 NEUTRON MATRIX: SANDSTONE MATRIX DELTA T: 177
MAGNETIC DECL: 15.3 FLUID CUTOFF: 7680 BIT SIZE: 12.45
PRESENTATION NAMEDATE = 2012-CROWN_NEUTRON.TRI 06/30/2012 VERSION: 4.54AG

SAWG METERS NEUTRON
0 DEG 60 3000 API-N 6000
GAMMA NEUTRON
API-GR 150 0 API-N 3000

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

0 API-GR 150 0 API-N 3000
GAMMA NEUTRON
0 DEG 60 3000 API-N 6000
SAWG METERS NEUTRON

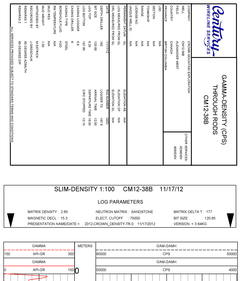
GAMMA-NEUTRON 1:100 CM12-38B 11/17/12

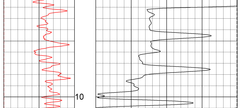
LOG PARAMETERS

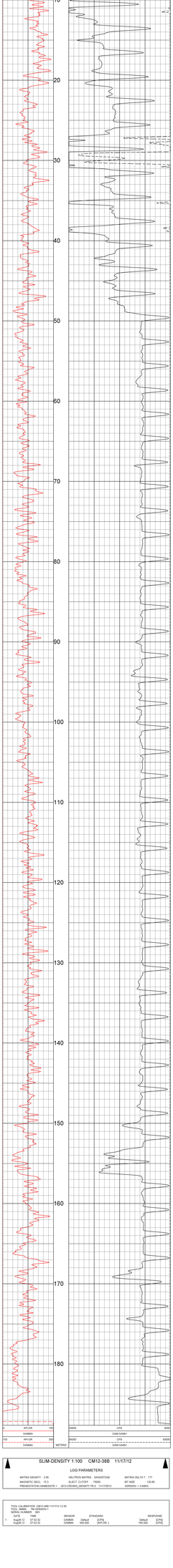
MATRIX DENSITY: 2.65 NEUTRON MATRIX: SANDSTONE MATRIX DELTA T: 177
MAGNETIC DECL: 15.3 FLUID CUTOFF: 7680 BIT SIZE: 12.45
PRESENTATION NAMEDATE = 2012-CROWN_NEUTRON.TRI 06/30/2012 VERSION: 4.54AG

TOOL CALIBRATION CM12-38B 1/17/12 12:14
TOOL 9008A TM VERSION 4
TOOL NUMBER 59

	DATE	TIME	SENSOR	STANDARD		RESPONSE
1	Aug02.12	04:09:25	GAMMA	Default	[CPS]	Default [CPS]
2	Aug02.12	04:09:25	GAMMA	540.000	[API-GR]	402.000 [CPS]
3	Oct15.07	08:09:58	FORDIST	Default	[CPS]	
4	Mar12.08	08:20:52	RES	0.200	[OHM]	9616.000 [CPS]
5	Mar12.08	08:20:52	RES	100.000	[OHM]	7619.000 [CPS]
4	Mar12.08	08:20:52	SP	0.000	[MV]	0.000 [CPS]
5	Mar12.08	08:20:52	SP	100.000	[MV]	3463.000 [CPS]
5	Dec04.08	10:40:49	NEUTRON	0.000	[API-N]	1.000 [CPS]
	Dec04.08	10:40:49	NEUTRC	171.000	[API-N]	95.000 [CPS]
6	Oct15.07	08:09:58	TEMP	Default	[CPS]	Default [CPS]
	Oct15.07	08:09:58	TEMP	Default	[CPS]	Default [CPS]







TOOL CALIBRATION: CM12-38B 11/17/12 12:35
TOOL BIAS: TM 0370/GN 0
SERIAL NUMBER: 643

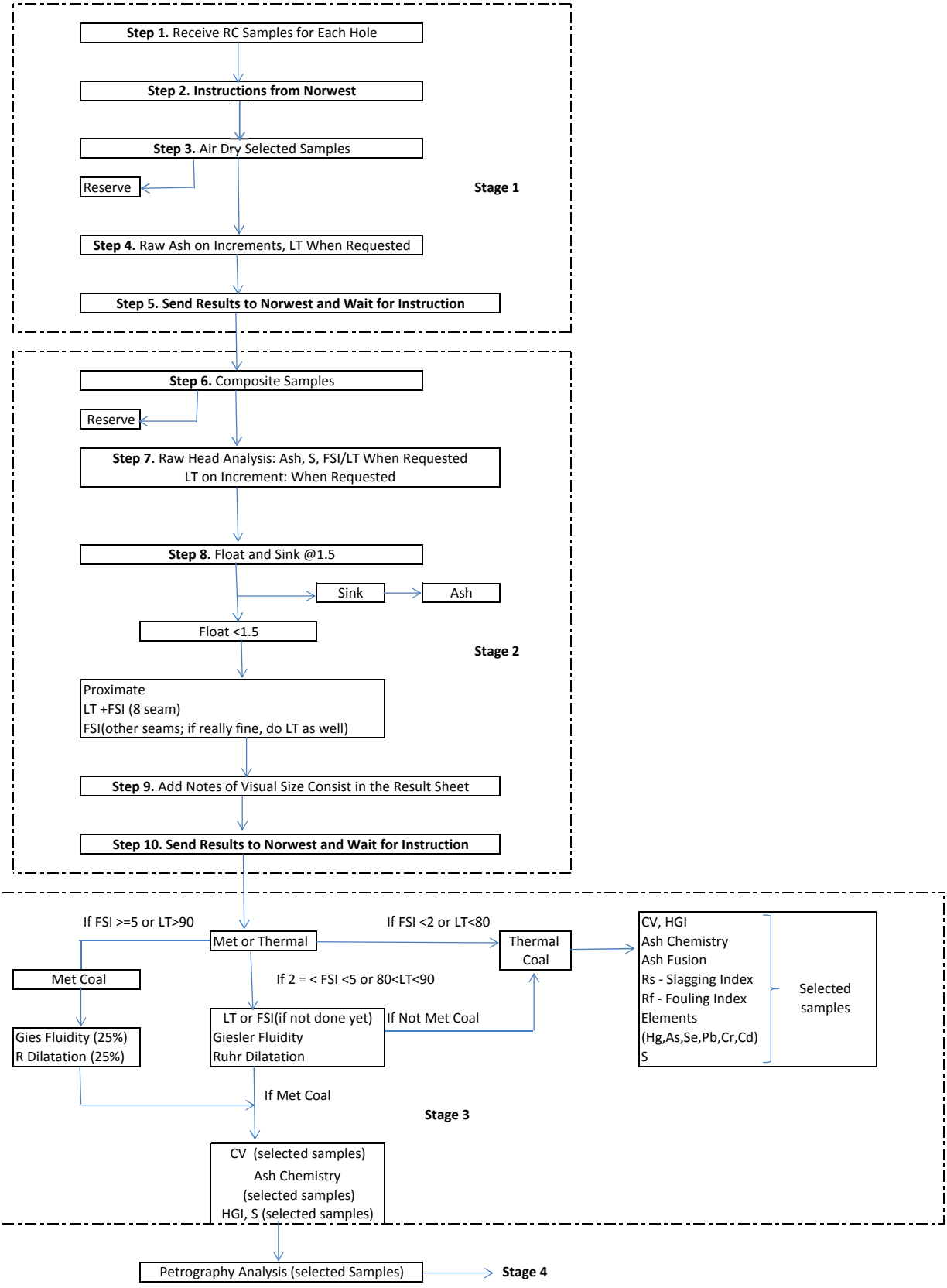
DATE	TIME
Aug28,12	07:52:10
Aug28,12	07:52:32

SENSOR	STANDARD	RESPONSE
GAMMA	Default [CPS]	Default [CPS]
GAMMA	545.000 [API-GR]	195.000 [CPS]

Appendix 5 - Coal Quality Analysis

NORWEST
CORPORATION

Reverse Circulation Cuttings Sample Test Plan_NWP Crown Mountain Coal Exploration



BIRTLEY COAL & MINERALS TESTING

QUALITY CONTROL PROGRAM

GWIL INDUSTRIES
Birtley Coal &
Minerals Testing
Division

BIRTLEY QUALITY CONTROL MEASURES

PURPOSE

- Birtley has in place accountability and quality control systems necessary to maintain the highest levels of test validity and reliability

- Birtley's quality control systems provide documented records to ensure that
  - ✓ such monitoring occurs on a regular basis
  - ✓ specified level of accuracy and precision is achieved in the routine performance of all tests, and
  - ✓ reported data was obtained from the samples submitted

- Birtley's quality control system acts as an early warning of operator or instrument error. Necessary steps can then be taken to rectify the method or instrument error

ACCOUNTABILITY

- Initial client dialogue identifies critical sample information such as shipping details, sample number, packaging, size and testing requirements

- A contract review form or other written instructions are strongly urged to be filled out by the client before testing is initiated

- Each sample is assigned a unique internal laboratory number that is used to correlate all samples, work, time, consultation and reports and any other paperwork associated with the job

- All reports and rough papers bear this laboratory number

- Other pertinent information also recorded on the lab number log sheets are the client name, sample identification, analyses to be performed and date of sample receipt

- When the analyses are completed the results are checked to ensure that all analyses are completed as requested and the work has been performed according to established lab procedures

- Records of laboratory number log sheets, client request papers, final and rough copies of reports are kept in the laboratory for two years and then filed for at least five years

- Samples are kept in the lab for one month and on the premises for three months to allow time for the results to be reviewed by our clients and rechecked if necessary (recheck analyses must take into consideration that the sample characteristics can deteriorate over time)

QUALITY CONTROL PROGRAM

A. Bulk Handling, Sampling and Processing

- Whether received loose (in a dump truck) or packaged (in barrels or bags), a bulk sample is dumped onto a clean steel mixing pad outdoors or a clean concrete floor indoors for homogenization and sample extraction

- ASTM prescribed procedures or alternate acceptable methods* are closely adhered to in the sampling stage, with particular attention given to minimum weight of sample taken in the reduction step to maintain representativeness of the sub-sample

- During homogenizing and sampling, special care is taken to prevent unnecessary attrition of coal particles which can bias the size consist of the sample. Also, dusting losses during this stage are kept to a minimum by considering the wind factor before work is initiated outdoors

- Applicable portions of samples are kept indoors for further testing while the residual material is left covered outdoors

B. Sample Preparation

- Upon receipt, individual samples are first sorted and placed in order, either numerically, lithologically, or in some chronological manner prior to being catalogued. Each sample is then sequentially assigned its own unique laboratory number

- Sample Preparation Technicians examine the samples to identify certain aspects of a sample or its container when received, e.g. potential weight loss or damage during shipping, and physical characteristics like color, smell, mass, average size consist, etc. of the sample. Observations are recorded and relayed to the client if discrepancies exist between sample shipped and that received

- A plastic tag, encoded with the laboratory number and a concise description of the sample, accompanies said sample at all times during preparation. A series of samples are processed in numerical sequence whenever possible

- All equipment (screens, crushers/mills, rifflers, pans/receptacles) including the analytical pulp container as well as all float sink liquids are cleaned between samples. Workbenches are cleared of debris before samples are weighed and processed

- Before each use screens are inspected for tears and aperture correctness

- A sample's initial weight (usually as received weight) is recorded for mass balance and for cross checking purposes

**Coal samples vary in physical characteristics often from mine to mine and sometimes from seam to seam. Applicable sampling methods may be adjusted from the norm to suit the particular sample. Therefore, procedural applications for one client's coal may not be wholly relevant to that of another client's coal.*

C. Laboratory Analysis

- ASTM methods for coal analyses are used where applicable. We also use ISO procedures, as well as modified methods for some tests where applicable and necessary. Procedures followed adhere to the specific client needs

- When a prolonged series of measurements is made (ex. sequential calorific values or SC-32 sulfur analyses) control samples (ex. benzoic acid) as well as duplicate runs of samples are made

- Check analyses are performed alongside most analyses. For example, a mineral analysis of ash is done in duplicate in a batch of samples to be analyzed. Unknown check samples are also given to laboratory technicians to check instrument and operator repeatability. QC checks are run with every batch of samples to ensure the instrument is performing within two standard deviations

- Where applicable, cumulative analyses are checked with the head sample results. For example, float sink cumulative ash should be within limits for the ash result for the size that was float sank

- If there is a problem with checks, instrumentation, or if control samples are outside limits, the technician notifies the supervisor and then depending on the problem corrects it themselves or the supervisor investigates and rectifies if required

- Notebooks are kept for each instrument to record maintenance and problems and the dates associated with them

- To verify sample test reproducibility Birtley subscribes to the CANSPEX program. This program compares test results of duplicate blind samples sent to subscribing laboratories and reports comparative results to the subscribers. Birtley can then compare its test results against the consensus of the other participating laboratories (~100) from around the world.

- Control charts are kept of the upper and lower limits of repeatability and reproducibility for the CANSPEX round robin program. If problem areas exist, it is then possible to assess and rectify those problems

D. Reports

- Results are reviewed and signed by the Laboratory Supervisor and Operations Manager and reported on a “Certificate of Analysis”

- The client is asked to fill out a customer survey on a regular basis as part of our feedback process

- Regular dialogue, whether by phone or e-mail, is sustained by the Operations Manager to ensure that all the clients analysis needs have been fulfilled

CALIBRATION STANDARDS

- Any laboratory instrument that has a temperature that can be recorded is calibrated with the temperature probe and the date and temperature are recorded in a notebook
- Scale balances and drying ovens are calibrated regularly
- Float-sink liquid's specific gravities are constantly monitored with hydrometers during separation and the gravity adjusted if required
- The Gieseler fluidity torque is checked yearly and both the Gieseler and Dilatation crucibles are specked out twice per year
- Standards for calibration include NIST certified standards, LECO certified standards, CANSPEX standards (if acceptable) and in house samples from participation in other round robin programs
- Control standards used are mostly prepared by Birtley and analyzed at least in triplicate
- Where the calibration check (either temperature or standard) is outside the established range for the instrument, the instrument is recalibrated prior to use. If necessary the instrument will be repaired to provide accurate and stable measurements
- Calibration standards are discarded when less than 5% of the material is left in the bottle to prevent any inaccuracies due to contamination or representativeness
- Equal care is taken in the calibration process as for any other measurements i.e. sample observation, including appropriate and equivalent mixing, weighing, and analysis methodologies so that they are subjected to the same measurement error
- An equal or greater number of determinations are used to establish calibrations as are determined for samples

DOCUMENTATION AND RECORDS

- Birtley has in place an accountability and quality control system and has a staff who understands the goals and the mechanics of the system (108 years of combined experience averaging 14 years per employee)
- Documentation and records also include the following elements: written procedures for all analyses and quality control, equipment maintenance logs, personnel training records, and control charts

KEY PERSONNEL

Operations Manager

Ms. Heather Dexter graduated with a Chemical Technology Diploma from the Southern Alberta Institute of Technology (SAIT) in 1984. In 1989 Heather joined Birtley as a Laboratory Technologist and over the last 22 years has served in various roles including Safety Coordinator, Office Manager, and Laboratory Supervisor and has been the Operations Manager since 2004. Since joining Birtley, Heather completed a Business Management Certificate at SAIT (1999) and has taken over 10 science degree courses through the University of Waterloo in Ontario as well as other business and sales courses in Calgary.

Sample Preparation Supervisor

Mr. Jack Abad joined Birtley in 1973 as a Plant Technician and has been promoted through various jobs to his current position as Supervisor. Over the past 38 years, Jack has gained considerable experience with all coal types and is considered an expert on all aspects of sample preparation. Jack is currently responsible for supervising and coordinating sample preparation, quality control, advising and designing programs for special projects, and preparing reports of results.

Process Coordinator

Ms. Veena Bhardwaj also graduated with a Chemical Technology Diploma from SAIT in 1996. Veena joined Birtley as a temporary Laboratory Technologist in 1998, was brought on as permanent employee and was Laboratory Supervisor from 2006 to 2012. Her current key roles include: coordinating sample preparation test work, learning all tests in sample prep and training for the Sample Preparation Supervisor position.

Senior Laboratory Technician

Mr. Vingh Ha has been with Birtley since 2001 as a Laboratory Technician and graduated from SAIT in 1994 with a Chemical Engineering Diploma. Vingh has extensive experience in maintaining and troubleshooting instruments as well as researching new and alternative methods of testing coal. He is currently training for the Laboratory Supervisor position.

List of ASTM Procedures applied for the NWP Crown Mountain Coal Exploration 2012 Program

PARAMETER	LAB METHOD
Preparation of Coal Samples	ASTM D 2013
Air Dried Moisture Loss%	ASTM D 3302
Residual Moisture wt%	ASTM D 3173
Ash wt%	ASTM D 3174
Volatile wt%	ASTM D 3175
Sulphur wt%	ASTM D 4239
Free Swelling Index	ASTM D 720
Carbon, Hydrogen, Nitrogen wt%	ASTM D 5373
Mercury ppb	ASTM D 6722
Light Transmittance% (Oxidation)	ASTM D 5263
Hardgrove Grindability Index	ASTM D 409
Rhur Dilatation	ASTM D 5515
Gieseler Fluidity	ASTM D 2639
Mineral Analysis of Ash	ASTM D 3682
Phosphorous Analysis of Ash	ASTM D 2795
Ash Fusion Temperatures	ASTM D 1857
Sieve Analysis	ASTM D 4749
Washability (Float Sink)	ASTM D 4371

Heather Dexter
Operations Manager
March 21, 2013

GWIL INDUSTRIES Birtley Coal & Minerals Testing Division

Pages 291-418 of this PDF remain confidential under the terms of the Coal Act Regulation, Section 2(1), and have been removed from the public version.

http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/10_251_2004